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QX-16 COMING SOON

Powerful, Compatible

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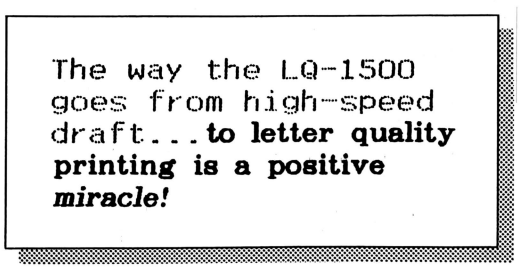

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Publisher
James S. Povec

Associate Publisher
Carl Cramer

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Alan Zeichick

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April Jenkins

Special Projects
Bonnie Helevig

Editorial, Advertising, Production and Business Offices of Epson World at:
P.O. Box 250
Highland Mill
Camden, Maine 04843
Telephone (207) 236-4365

EPSON WORLD is published quarterly by Computer Communications, Inc., a Maine corporation with offices at Highland Mill, Camden, ME 04843; James S. Povec, president; Carl Cramer, vice president and treasurer.

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ISSN 8755-1047

I want it! TRAINING

The Complete Epson Computer Primer

By David Barrett & Michelle Mehterian

Unlock the secrets of Valdocs 2!

People have a special feeling about Epson. Wherever you're going, in school, business, or life, Epson computers and software can open a whole new world for your creativity.

The Complete Epson Computer Primer is part of this amazing revolution. Valdocs 2 offers *more features* and modules than *any* other integrated software package on the market. Find out how to use the power of Valdocs 2, MS-DOS, CP/M, TPM III, Color, and much, much more.

The Complete Epson Computer Primer details the use and power of the HX-20, PX-8, QX-10, and the *brand new* QX-16 personal computer. Tips and tricks *not found* in the manuals, contacts for user groups and telecommunications, and complete instruction for interfacing hard disks, modems, printers, and much more.

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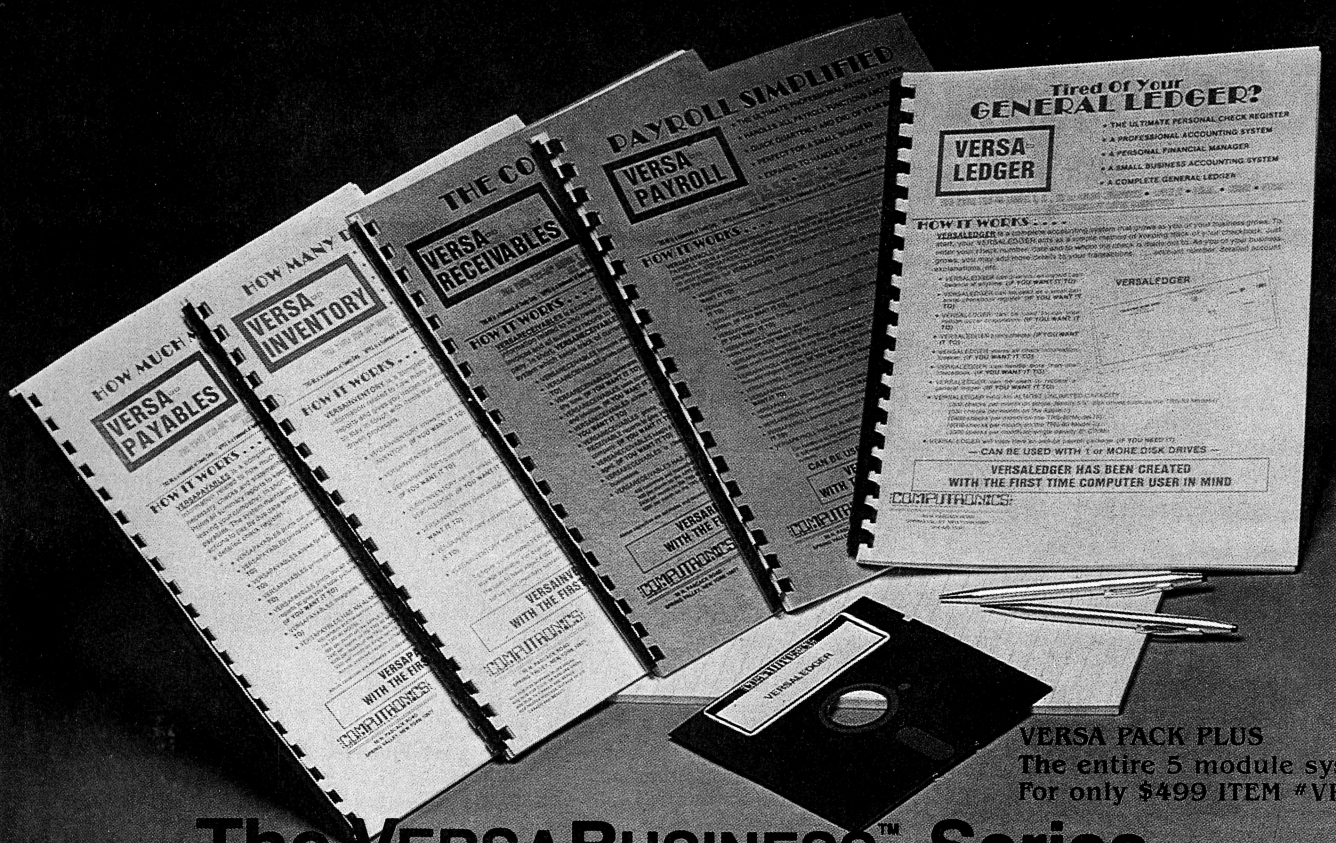

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CIRCLE NO. 11 ON READER SERVICE CARD

TAKING UMBRAGE OVER PRESS COVERAGE

Perfory will be the one spot in each issue where those of us who toil in these vineyards will get a brief chance to say what we think. Consulting editor Jim Hansen blows off a little steam in round one:

"I'm concerned about the porky press given Epson, Valdocs and Rising Star (RSI) personalities. It doesn't seem possible to read anything in the computer journals these days that doesn't condemn the QX-10 as being slow, slow, slow and therefore unusable. Or that because someone at RSI as being visionary, all RSI products are worthless.

"It seems more than just the jaundiced output of a couple of writers with axes to grind. Of course there's John Dvorak and InfoWorld, who never let facts get in the way or run out of bricks to hurl at anyone or any product.

"They panned Epson on more than one occasion. But then, they also blasted Tom Kurtz and John Kemeny for commerically developing TRUE BASIC, a major new programming tool. Kurtz and Kemeny invented BASIC in the mid-sixties under a NSF grant and have never made a penny from it. The people at IW are probably as harmless as they are uninformed.

"Then there's Jerry Pournelle, a science-fiction writer-turned computer maven in the short couple of years he has been writing for Byte. Since Byte is "the" computer magazine, stuff written there is of more serious concern to the reputation and well-being of computer products. He originally dumped on Epson and Valdocs, but has recently softened his tone.

LATEST BLAST

"Probably the latest blast at Epson was published in the February issue of Popular Computing. Under the guise of a QX-16 review, author Jonathan Sacks devoted less than 10 paragraphs to the computer, then flailed away at Epson, Valdocs and RSI's Chris Rutkowski with some of the most biased editorial I've seen.

"Sacks was given total freedom at RSI, including access to most of the staff and unfettered use of Valdocs 2, starting sometime last August, to research his piece. Rather than report on a different kind of company that, if nothing else, would describe to the reader the doings of an unusual organization, he chose to write an article that would insult an ox.

"Don't get me wrong. I don't suggest that everything written about computer products should extol them. And I'm certainly not an apologist for Epson or RSI. But is it responsible to run a cover story that contains less information about a product than a typical press release and, on top of that, to mire it in five pages of personality criticism? I think not.

"What has happened to the computer press? Does anyone do any original research or verify facts?

SO, HOW ABOUT IT, MAC?

"For example, have you ever read of anyone comparing the actual time it takes to perform a task in Valdocs against something comparable in CP/M? I haven't. All you hear about is how s-l-o-w Valdocs is. Probably the best kept secret in the personal computer world is that Valdocs is, for the most part, faster than Macintosh.

"You haven't read about the speed of the MacIntosh? It certainly doesn't get the coverage Valdocs gets. Nor has a lot of criticism been voiced about MacWrite, the text processor supplied with the Mac. If you have a Mac, you know about these things.

"MacWrite is little more than a note pad. It is s-l-o-w. Disk access is appallingly slower. If you want to copy a disk you have to swap the original and the copy back and forth a zillion times or buy another drive. There isn't much room on the disk to save anything, only about 12K. The operating system is closed so you can't write your own programs without a substantial amount of expertise and added expense. Until recently you had to buy a Lisa to even do that. Now you can do it if you have two Macs.

"But there is hope for the Macintosh crowd. They can spend another $1,000 and double the Mac's memory, at which point the system performs faster than Valdocs 1.18. Lucky them.

"The point I'm trying to make — in case I lost it in that tangle above — is that for whatever reason, we see the Epson line shot down in flames, while other systems — replete with their own wartiness — escape the flak unscathed.

"Why? You tell me." — *J.H.*

IN THIS ISSUE

We take a hard look at the new QX-16 — the first full review published anywhere — and the QX-PC 2 co-processor board from Titan Technologies. If good IBM compatibility is part of what you're after, and you already own a QX-10, you've got a hard choice to make.

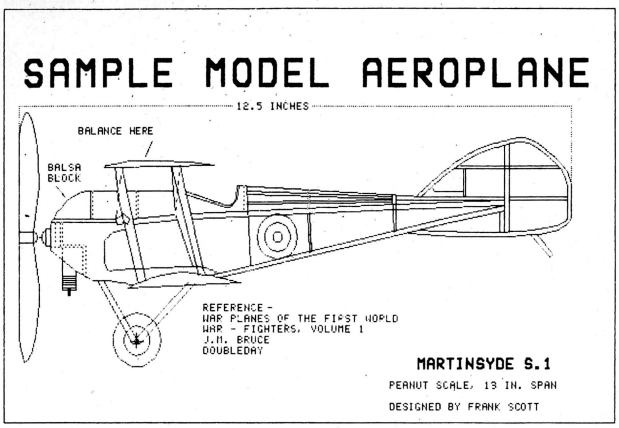
Sdraw is a wonderful graphics tool developed by a 14-year-old using RSI BASIC . . . and it's our feature program. A second graphics entry tells you how to create your own fonts and foreign characters on the QX-10. It's a creative effort that results in the erudite.

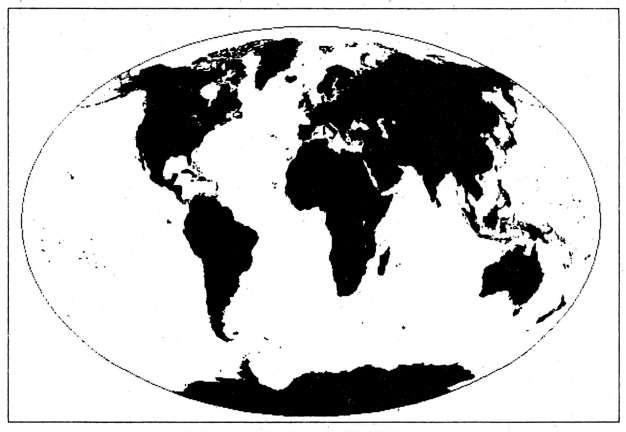
This issue has something for just about every Epson user. We hope you'll find both utility and enjoyment in these pages.

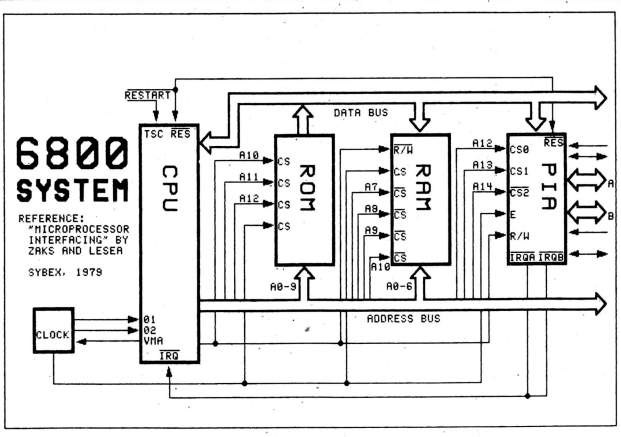
IF YOU OWN A QX-10, YOU OWE IT TO YOURSELF TO GET QXDRAW!

WHAT IS QXDRAW?

QXDRAW is a powerful graphics design tool that exploits the excellent graphics capabilities of the Epson QX-10. It allows someone unfamiliar with computers to design and draw figures, charts, schematics, or blueprints in no time. QXDRAW has the capability to store, retrieve, and print figures drawn on the screen. In addition, it can fully manipulate figures and text by changing size, angles, and dimensions.







QXDRAW —

- Provides an easy-to-use cursor that can be moved about the screen.
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- Draws circles and ovals easily.
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- Allows lines of varying thickness to be used.
- Includes "area fill" capability.
- Features the Epson function keys: HELP, UNDO, STORE, RETRIEVE, PRINT, INDEX, and STOP.
- Allows text to be displayed at any location, size, or angle.
- Stores and retrieves the screen display on disk.
- Prints the screen display on Epson printers.
- Allows figures and symbols to be created, stored, and retrieved at any location, size, or angle.
- Allows text and figures to be slanted in any direction, giving modern or three-dimensional effect.
- Provides for user-created files to be input and displayed on the screen. This allows data from other programs to be used.

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CIRCLE NO. 2 ON READER SERVICE CARD

THANKS TO HANSEN'S VALDOCS LITERACY

Finally, a writer who's also Epson-Valdocs literate. I had almost despaired finding you.

I've a plea. I love my Epson for its keyboard, clearly labeled command keys, and straightforward word processing. That's my only interest and my only use of my QX10 and Valdocs 1.19. I wouldn't know a spreadsheet if I saw one.

Therefore, I'm concerned that Valdocs 2 has jammed all the space for word-processing improvements with number stuff. I'm hesitant to buy it, even though I'm desparate for the header capability. Can someone reassure me that numbers haven't won out over words in this improved Valdocs?

Also, regarding your comments on hard disk: I'm impressed that you're such a fast writer that the speed of function is of primary interest. My Valdocs is usually finished with an action and waiting before I can think of the next line of deathless prose. I'd love to learn, however, that a hard disk would hold an entire novel.

Would I be able to move blocks around in the whole book on a hard disk? Could I do a global replace on a character's name? Would I never again suffer the pain of losing a chapter because I unwittingly filled the entire floppy disk and it threw up onto the blank disk unindexed and therefore irretrievable? And would a hard disk let me print a 52-page chapter and write another one simultaneously?

For printing I use a CRII for letter-quality manuscripts. But it's slow and I can't work while it is underway because I can't change to a fresh disk.

And could I get the answers about capacity translated into number of double-spaced pages instead of bits, bytes or K's? Or could you refer me to a conversion chart?

My dealer doesn't understand what I'm talking about. Epson East says they've never seen a full disk, and when I sent them one, called to say they couldn't figure out what to do with it. All I wanted to do was print it and sell it. But alas, it was gone forever.

All I want is a dependable, labor-saving device that lets me write, rewrite, proof, and present impressive looking manuscripts to agents and publishers.

If this wonderful software exists and is compatible with my plain old QX-10, please let me know.

Rebecca Tudor
Rowayton, CT

I hope I haven't mislead you. Valdocs 2 has not been given over to the number-crunchers. The editor, by size, is probably the largest module in the system. It does everything that your version editor does and more. It's faster, implements the typestyles keys and has more features such as headers and footers.

You asked about storage requirements for double-spaced pages. Don't let computer words bother you. A byte, for your purposes, is a character. A kbyte is 1000 characters. (More precisely, it's 1024 characters, but you can round it off). Your QX-10 disks can hold a maximum of 372,000 characters.

In a document, each character in a word or space between words counts as a byte. The blank lines between rows of text don't count.

Let's say a typical double-spaced page has 300 words and an average of five characters per word. Such a page requires 1,500 bytes of storage plus about 300 for the spaces between words. A 50-page document made of these pages consists of 50 times 1,800 or 90,000 bytes of storage.

Large documents are a problem for those using a floppy-based system, regardless of what editor or text processor is used. In Valdocs version 1, there is about 50- or 60-thousand characters of overhead storage used on the data disk. This information consists of two disk directories (a spare is included for backup purposes), index files, cross reference files and a scheduler file, to name a few. The bottom line is there's probably room for about 300-thousand characters of storage available for document files on a single Valdocs version 1 data disk.

Valdocs 2 has less overhead, but it still has to be factored in as well. I'm not sure what the actual figures are since at this writing Valdocs 2 has not been released.

When a document is edited with Valdocs 1.18/1.19, a copy of the original files is made as it is brought into the editor. Actual editing takes place on the copy, not the original. Since the data disk has room for 300-thousand characters, the largest document you can edit will be an absolute maximum of 150-thousand characters long, assuming there's nothing else on the disk.

It's unlikely you can ever reach this theoretical limit. Because there's even more overhead in the use of the disk as you edit and change things, the operating system has to record where these changes are stored on the disk, and that undercuts even more of your precious storage.

There's something else to consider: a copy is made of every file to be printed. Thus it's not possible to simultaneously print and edit a file of this length — the disk isn't big enough to hold it all. The copy is called a spool file, and is automatically purged after it has been printed. The value of this technique is that you can edit or delete a file as soon as you have asked for it to be printed.

The Valdocs 2 editor works it a little differently. In simplified terms, here's how it

continued on page 38

Free with Combo Pak

If you use CP/M programs on your Epson, SmartKey II can save you thousands of tedious keystrokes. SmartKey II is the software program that is taking the computing world by storm. Peter McWilliams, William Buckley, and others rave about how SmartKey II speeds up and improves accuracy in computing.

Smartkey II lets you easily reprogram as many upper and lower case keys on your keyboard as you want, even while your other software — such as Peachtext, WordStar, dBase II, etc., — is in operation.

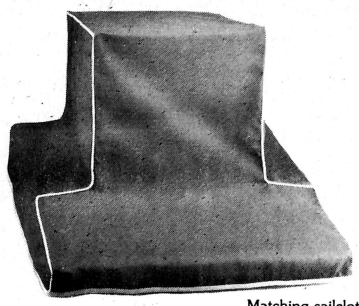
Uses for this powerful, easy to operate program are endless. With SmartKey II you can assign thousands of characters to a single key. Once you have redefined keys, you can put them to work or change them at will. You can also store your "smart key" definitions in a special file and use them later, or make numerous definition files to use with a variety of your favorite programs or projects. Imagine saving complex command codes, boilerplate paragraphs, sentences, proper nouns, inventory numbers, or whatever, and then injecting any of them into your work with the stroke of a single key. SmartKey II can even make many of your Epson's HASCI keys come alive and be productive in CP/M programs.

SmartKey II Plus has a little known super companion program called SmartPrint II Plus. SmartPrint II retails at $49.95. SmartPrint lets you give single-stroke commands to your dot matrix printer to make it produce italics, graphic symbols, boldface, underlining, extended typefaces, accent marks, and much more. SmartKey II retails at $89.95. Now, for a limited time only, Central's price for a SmartKey II and SmartPrint II **combo pak** is only **$79**. In addition, as a bonus, with your combo pak you will receive a **free** copy of Paul Golding's book, *Screen Smarts, The Computer Tamer's Guide*. This book is a $15.95 value. It tells how Mr. Golding, a professional writer, uses SmartKey II to turn his humble computer into a supercharged dedicated word processor. Please don't delay, this offer may not be repeated. Order today to get SmartKey II Plus, SmartPrint II Plus, and a free copy of *Screen Smarts, The Computer Tamer's Guide*, fast.

Warning: There's nothing like SmartKey. It makes similar programs look dumb. Saves time and money too.

Introducing A Classic Form Fitting Epson Cover

Photo: Form-fitting cover over CPU, monitor, and keyboard.



At last, the classic Epson dust cover you'll be proud to own and use. This first rate computer cover is made from a premium, lint free, static free, washable, free breathing, and fade resistant sailcloth. It comes in a rich looking Navy blue or Sand. The Navy cover has a smart contrasting silver gray piping and trim that adds a superior finished look. Not to be outdone, the Sand cover is handsomely finished in a rich chocolate piping and trim.

Matching sailcloth covers for all Epson and ComRiter printers: $15.95. Please indicate make and model of printer.
New. Special 2-piece QX-10 cover: $21.95 per set.

For a limited time only, your price for this factory direct, custom made, one-piece sailcloth Quality Cover is $18.95. When ordering remember to indicate color preference. This special low price is subject to change. You must be completely satisfied with your purchase of this cover or we will refund your money immediately. Order today.

- Quality tailoring
- Easy care fabrics
- Attractive colors
- Professional appeal

Richly tailored inside and out. Look inside any of our Quality Covers; see the ultimate finishing; we use machines that sew with 3 needles so that edges will not unravel or shed lint. We stress perfection because you deserve the best. Compare for long-lasting satisfaction.

FACTORY DIRECT

Letter Quality

Say goodbye to correspondence qual
high–resolution, proportionally spa
Font provides fonts in sizes from
Roman, Bold, Italic, Script, Old En
low–cost Epson (MX, RX, FX) and
Font is an easy–to–use software pa
compatible systems; no special hardv

Actual sample produced by an MX-80 and Fancy Font.

Incredible Printing Machine

Your Epson printer is going to get even better. *Fancy Font* can make it into an incredible printing machine. The *Fancy Font System* is a software program that turns the bits and bytes generated by your computer into over 30 font sets in sizes from 8 to 40 points that can be printed on any Epson MX80 with Graftrax, Epson FX or RX printer, or Gemini 10X printer.

Fancy Font styles include Roman, Bold, Italic, Script, Old English, and more. In addition, custom forms, invoices, labels, signs, foreign languages, mathematical notations, view graphs, resumes, newsletters, brochures, complete manuals, invitations, place cards, and high-resolution, proportionally spaced, letter quality business and personal letters can all be printed on your Epson printer with *Fancy Font* at the helm. *Fancy Font* is a product of SoftCraft Inc. You may have seen SoftCraft's national ads. They are printed with *Fancy Font* on an Epson printer. The ad is powerful visual medicine. The list price for the fully documented *Fancy Font System 2.0* is $180. Central's price is only $149. Order *Fancy Font* today and add an amazing sparkle of creativity to all your printed materials. Please indicate name and model of your printer when ordering. *Fancy Font* will make your Epson printer and Valdocs or CP/M word processor come alive. It's magical.

Stop Tearing Up Your Disk Drives

If you're using your Epson as a printer buffer instead of a computer, you may be tearing up your disk drives. Disk drives are mechanical devices, they are often the first parts of a computer to go sour. No wonder. Everytime you feed your printer a file, the drives whirl madly until the printer has accepted the entire file. Sometimes this takes a long, long time.

The Epson can dump a file faster than a printer can accept it. So, it's great to have a device that will catch the file, quiet the disk drives, and give the computer back to you.

Photo: MicroSpooler 64 K P-P

CONSOLINK MICROSPOOLERS

Description	List	Price
64 K P-P	$315.00	$279.95
64 K P-S	$343.00	$299.95
64 K S-S	$349.00	$299.95
64 K S-P	$339.00	$299.95
Cables	$ 54.00	$ 29.00

64 K	Stores and spools files as large as 64 K.
P-P	Parallel Epson port to parallel printer port.
P-S	Parallel Epson port to serial printer port.
S-S	Serial Epson port to serial printer port.
S-P	Serial Epson port to parallel printer port.
Cables	Set includes one special male to female connector and one male to male connector. — Please tell us model and type of printer you're connecting to your computer.

Includes these unique features:

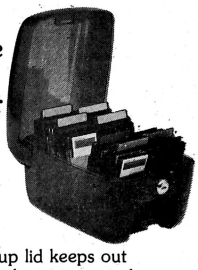
- Status digital readout
- Multiple copy function
- Temporary pause function
- Sleek internal power supply
- Comprehensive self test routine
- Slimline attractive casing
- Front panel reset
- 12 month factory guarantee

If you're tired of hearing your disk drives grind down, you need a printer buffer. The best performance and price buffer on the market is the Consolink MicroSpooler. This computer-like tool absorbs files as fast as your computer can send them, and then patiently feeds or spools them to your printer a few bytes at a time.

The MicroSpooler is an intelligent, feature-packed buffer. It is easy to install and operate. Merely place it between your computer and printer, then connect it with two cables, and feed files as large as 64K within seconds to your letter quality or dot matrix printer. The instant the transfer is complete, you can operate your computer again. The MicroSpooler does the rest. No more waiting.

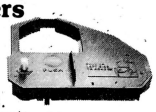
The MicroSpooler comes in a variety of configurations. You can link your Epson to any popular printer with two inexpensive cables. Please check our low MicroSpooler prices. You won't find a more feature-packed or reasonably priced spooler around. Try the MicroSpooler of your choice for 15 days. If you are not completely satisfied with your purchase, return it for an immediate full refund. Your Epson deserves this attractive and useful accessory. Order a compact and powerful MicroSpooler today. Works with all model computers.

Lockable Diskette Defender



Handsome, sturdy, smoke-tinted acrylic tray holds 70 Epson-size diskettes. Flip-up lid keeps out dust, debris, and moisture, and locks securely to guard your important work. Comes with 7 dividers with index tabs for easy filing and to keep floppies upright to prevent bending, warping, and scratching. Tough and secure metal lock never comes in contact with diskettes because it is enclosed in a special plastic housing. Super value at $22.95 for one, or $21.00 each if you buy 2 or more. Keep prying eyes and sticky fingers away from your data. Order today.

LQ 1500 Users



Compare and save. Epson's LQ 1500 ribbon gives you 3,000,000 characters. Our top quality LQ 1500 ribbon produces 4,500,000 characters. Epson's list price is $17.50 per ribbon. Our price is $49 for box of six ribbons. In stock. Order today. Complete Satisfaction Guaranteed.

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800-624-5628 CA

CP/M Prod. Description	List	Central
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dBase II	$495.00	$368.00
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MBasic	$ 39.95	$ 35.00
Multiplan	$ 75.00	$ 59.00
SuperCalc	$ 75.00	$ 59.00
Wordstar	$ 75.00	$ 59.00
BORLAND INTERNA		
Turbo Pascal 2.0	$ 49.95	$ 47.00
Turbo Toolbox	$ 49.95	$ 47.00
Turbo Gift Pak with Turbo Tutor	$ 99.95	$ 92.00
CDE SOFTWARE		
Checks & Balances	$ 74.95	$ 69.95
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QX-PC 192k MSDOS NEW	$595.00	$439.00
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QX-10 User's Guide, Hansen	$ 17.95	$ 15.95

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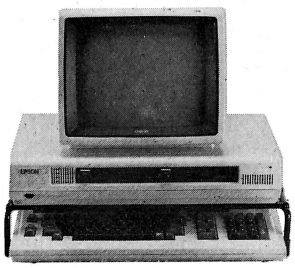
Attention: The rewards of using *Quick Check* include saving time, money, work, discomfort, and worry about your money. *Quick Check* is absolutely the easiest full-featured money manager, check printer, and budget organizer available. Bar none.

Perfect Epson Stand



Simple, strong, sturdy, safe. These words describe an attractive stand that provides a perfect spot to place your Epson computer and monitor on. This stand is made from rounded, steel rods covered with a thick, shiny, soft, black polymer material that protects your Epson and table top from scratches. Unlike flat wood or acrylic panels used in other stands, the tough supporting rods of the Smart Stand (TM) do not obstruct air flow. In fact, since your Epson is lifted off the table top and fully supported by this stand, air flows freely all around your computer to help keep it cool. When you're finished computing, you can slide the keyboard completely under the stand to create a working area on your desk. Incidentally, lifting your QX-10 off the table top makes it much easier to insert and remove diskettes out of the disk drives. The Epson Smart Stand is a super value at $34.95. Try it for 15 days. If not completely satisfied, send it back for a full refund. Matching 80 or 132 column printer stands are only $26.95. Order today.

Public Domain Pak

The Free Software Handbook is chock full of documentation, reviews, and commentary on the use and abuse of the best 70 CP/M public domain programs. It might cost a dedicated hacker hundreds of hours and maybe thousands of dollars to track down this box full of goodies. Super CP/M utilities like Unerase, D.Com, and RPIP are here. This bundle of free software includes Bio.Com, Wumpus.Com, Adventure.Com, Food.Com, and dozens of other popular programs too.

If you want to share in the free software bonanza but don't have the time to search through piles of useless software to find a few precious gems, this book is for you. The list price of *The Free Software Handbook* is $17.95. Central's price is $15.95. However, QX-10 users can now get both *The Free Software Handbook* and all 70 programs reviewed in the book for $49. Save yourself the expense, and time and effort of compiling these programs. Order the *Free Software Handbook* and companion programs today.

The Free Software Handbook is published by PeopleTalk Associates. The authors looked at thousands of programs. They challenge readers to find better ones. It can't be done.

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A REVOLUTION IN COMMUNICATION SYSTEMS **Copyright©1983 by Philip L. Becker**

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Who says remote computer communication has to be tricky? Whoever they are, they're wrong. Why must it take a programmer to set up and maintain a personal communications system? It doesn't anymore! TBBS offers a fast, friendly, flexible, easy to use and responsive approach to remote computer communications which is as easy to set up and use as a spread sheet.

1. Ease of use for callers. VALDOCS users will enjoy using a system that doesn't require a working knowledge of CP/M. The VALDOCS Mail function will even handle file transfers with TBBS!

2. Word wrapping so that various screen sizes get a smooth and properly formatted display no matter what screen size was used during text entry. Your callers will love you for it!

3. Complex or Simple Structures. Up to 20 levels of Menu Nesting and UNLIMITED numbers of menus may be utilized for those of you sinister enough to force your users to traverse the "Twisty Passageways."

4. Electronic Mail Service plus up to 25 separate message boards. These boards can be configured for either Private or Combined access or both. You can even authorize individual SYSOPS for each of the message boards!! Each user may be given read only, read/write or no access to each board!

5. Menus are composed using a Menu Editor allowing total flexibility in system appearance. TBBS may be made to look like a system you've seen before or like something totally new and unique.

6. Question and answer capability allows product ordering, vote taking, user surveys etc.

7. Storage capacity and efficiency. TBBS utilizes 1/3 the disk space of competing systems! Maximum message capacity is 2500 messages! The userlog stores system configuration, access and privilege levels, password and other important information for up to 65,535 separate users.

8. Option to disallow new users. By denying access to new users a completely private system can be constructed. This is particularly useful in user group and business applictions.

9. System security is enhanced by the optional uses of a logon password check, 255 privilege levels, and 16 feature/command authorization flags. These features provide an unprecedented flexiblity in presenting TBBS to various users.

10. Fully protected remote use of DOS, Basic and most programs, including SYSOPing, is available if desired. This may be restricted or public.

11. All system maintenance is easily accomplished with the provided utility programs. Such tasks as removal of deleted messages, restoration of deleted messages, userlog maintenance, menu creation/editing, configuration of system options, and system backup are easier than ever before! Continuity in message reply chains is preserved where logical when messages are deleted in the middle of the chain.

12. Fast, Responsive, and fully protected!! 1200 baud on TBBS averages 40%-120% faster throughput than competitive boards. TBBS responds instantly when a caller commands! Most other systems respond at the end of a line or series of lines or at certain times not at all. TBBS is ready for a new caller in an average of 5 seconds!! With TBBS you can expect a 50% increase in the number of callers serviced due to rapid reset time, system responsiveness and advanced system engineering techniques. TBBS also cleans up correctly after accidental loss of carrier. No hung systems! No lost messages! No forgotten deletes! Even when using remote DOS!

13. At last, a TRULY COMPATIBLE system!! User and SYSOP interface is identical and all data and control files are fully transportable across all supported machine and DOS types!

14. System requires an EPSON QX-10, CP/M 2.2, and an auto-answer 300 or 300/1200 baud auto answer modem. (NOTE: 1200 baud requires a specially modified cable.) We also support many other CP/M 2.2, MS-DOS 2.XX and Radio Shack TRS-80 Models I, III and 4 computers.

15. To see what we are talking about call TBBS headquarters at (303) 690-4566. TBBS has to be used to believe!

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CP/M is a registered trademark of Digital Research, Inc.
MS-DOS is a registered trademark of Microsoft, Inc.
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CIRCLE NO. 18 ON READER SERVICE CARD

DESIGN YOUR OWN CHARACTERS FOR ENJOYABLE CREATIVITY WITH THE QX-10

By Jim Hansen

HAVE YOU EVER wanted a special or foreign character for your QX-10?

I recently needed an English pound symbol instead of the # character just badly enough to take the job on. It's a little technical , but not difficult. If an EPROM programmer is available, it should only take you an afternoon to design a dot matrix character.

If you've never done it before , you will find it a pleasantly creative process.

FIRST, A PRIMER IN SCANNING

The screen display on the QX-10 uses raster scan technology, similar to that used in conventional television receivers. This display technique scans an electron beam from left to right across the face of the cathode ray (picture) tube (CRT).

At the completion of each scan line the beam rapidly returns to the left side of the screen, moves to the next lower line and repeats the left-to-right scan. When the bottom line has been scanned, the beam is brought back to the top of the CRT. The scanned area of the CRT makes up the raster. In the QX-10 that consists of 400 lines. You can see the raster by turning up the brightness control on the back of the QX-10 monitor.

Dot matrix characters are displayed on the QX-10 screen. Each character is made up from a pattern of dots placed on a grid, much like those on a sports scoreboard. QX-10 characters are made from a matrix of eight dots wide by 16 high.

The characters are displayed by turning on the electron beam for a very short time to form a dot on a raster line. Each of the 16 rows forming a character are placed on consecutive raster lines.

The eight dots making up the rest of the character follow one after the other on the raster line. Figure two shows how a dot matrix character is formed by dots placed on a series of raster lines.

The QX-10 screen has a graphics resolution of 640 dots horizontally by 400 vertically. This allows 80 characters eight dots in width to be displayed on each line. Eighty characters multiplied by eight dots gives 640. Vertically 25 lines of characters made of 16 lines each can be displayed. Twenty-five multiplied by 16 is 400, the number of raster lines in the QX-10 display.

With this background, let's look at how the QX-10 actually displays characters on the screen.

INSIDE THE VIDEO CONTROLLER

The QX-10 computer is made in three major sections: the power supply, the main printed circuit board and the video display controller (photo one) . The video controller is built on a small printed circuit board which rides piggyback on top of the main circuit board. It consists of 128K of screen display memory, a display controller chip (a NEC uPD7220), a character generator EPROM chip, and various logic for converting digital signals into video for display on the QX-10 screen.

The character generator used in the QX-16 7220 video controller is the same as that in the QX-10, and so the information here can be applied to the QX-16 as well.

continued on page 20

For those who loved their QX-10, the new machine has more pluses than minuses. MS-DOS compatibility and greater "Crunch-Ability" make it a good upscale.

QX-16 BRINGS MS-DOS COMPATIBILITY WITH POWER AND STYLE

By Jim Hansen

IN THE PREMIER ISSUE OF Epson World, I described the QX-10/ Valdocs evolution underway at Epson. The QX-10 computer system is a wonderous invention.

Keyboard layout and physical keys allow hours of continuous use with little fatigue. The screen provides the clearest, most legible rock-solid display available. Graphics resolution — at 640 by 400 pixels is presently at the high end of the personal computing scale. What could Epson possibly do to top all this?

Replace it with the QX-16, that's what.

First announced at a news conference October 10, 1984, the QX-16 is to be Epson's first shot at a MS-DOS compatible computer. Statements made then indicated the new machine would be available early in 1985. Epson apparently does not intend to continue manufacturing the QX-10.

POWER UNDER THE HOOD

The QX-16 features a Z-80 microprocessor for CP/M and TPM-Valdocs compatibility and an 8088 processor to run MS-DOS and most programs available for IBM.

The QX-16's dual five-and-a-quarter-inch disk drives operate in both 40- and 80-track modes. The 40-track mode gives 360 kilobytes (K) of storage when used with MS-DOS.

TPM and Valdocs can be used in the 80-track mode for 720K of storage per drive. CP/M can only be used in the 40-track mode for 380K of storage. Either 40- or 80-track TPM and Valdocs disks can be used on the QX-16, allowing full compatibility with those used on the QX-10.

As with the QX-10, a Centronics parallel printer port, serial RS-232C interface, two-K of battery powered CMOS random access memory (RAM) and an internal calendar clock are standard on the QX-16. Additionally, the QX-16 computers sold in the United States will come with a half-megabyte of memory.

The QX-16 that I describe here was a pre-release version. At the time I was using the system, minor changes were still being made to the keyboard and the read-only memory (ROM) used by the 8088 microprocessor chip for MS-DOS compatibility. For this reason I made no attempt to evaluate the system's "compatibility quotient," nor to run definitive performance tests. But I do think you will enjoy taking a close look at the machine for comparison with your QX-10.

Either 40- or 80-track TPM and Valdocs disks can be used on the QX-16, allowing full compatibility with those used on the QX-10.

BODY STYLE

The successor to the QX-10, on the outside, is interesting for a number of reasons. The monitor styling is more "squarish," lending a somewhat futuristic appearance to the unit. The electronics case is quite similar to the QX-10, but about a half-inch taller. These styling changes place the bottom edge of the display about an inch-and-a-half higher than on the QX-10.

Unlike the QX-10 monitor which draws power from the main electronics case, the QX-16 monitor uses a separate AC power cord.

I was concerned about the monitor height, but after a few days of working with the QX-16, I decided that it doesn't much matter. New users will never notice the difference.

The display is considerably brighter than that of the QX-10. Now it's possible to work under fairly bright lights without as much strain. The display will show up much better in stores where Epson displays are always dimmer when viewed side-by-side with the competition. The bold display mode is not nearly as distinctive as on the QX-10 display.

The keyboard has changed too. The two control keys have been moved toward the center of the keyboard by about a key width. The GRPH SHIFT key has been relabeled ALT, and the light-emitting diodes (LEDs) have been removed from the function keys. An added plastic strip above the function keys covers a legend strip that can be labeled for custom applications.

The little bump on the numeric cluster five key has been removed. It was missing from the original QX-10 keyboard, then added onto the HASCI-2 keyboard supplied with the QX-10 computers since late summer of 1984.

All this offers no important improvements over the HASCI-2 keyboard sold with the later QX-10 computers. However, I did find the control key placement slightly more comfortable to use.

I am not sure why the GRPH SHIFT key was relabeled ALT, or why the dimple was removed from the numeric keypad. Key feel is about the same as the HASCI-2 keyboard and is still the same pleasant keyboard to use.

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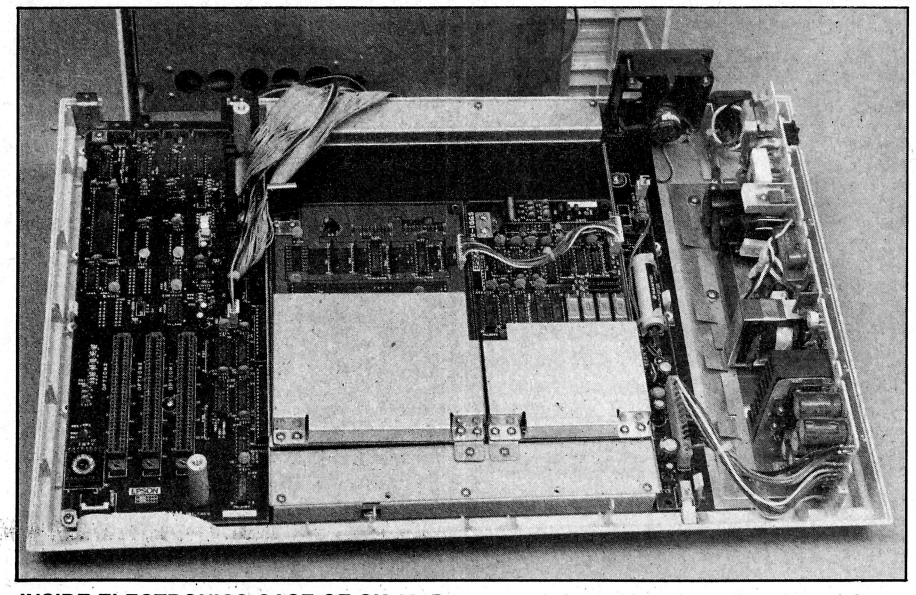


INSIDE ELECTRONICS CASE OF QX-16. Power supply is positioned on edge along right side of case. Video controllers are mounted to aluminum pan above main printed circuit board. Three expansion slot connectors are shown on left side of main board. Two disk drives are mounted in top half of case.

Given the choice, I like the QX-10 keyboard because of the lights in the function keys, the dimple in the numeric five key and the color styling. The QX-10 and the QX-16 keyboards are plug-compatible, but with the cost of the HASCI-2 keyboard at about 250 dollars, you probably will not want to change.

Stylistically, I like my QX-10 better than the QX-16. The QX-10's soft, cream-white color, dark keys and black disks render a comfortable, friendly appeal to me. The white-grey combination used on the QX-16 looks stark to me, almost teutonic. But that's just my prejudice, and you may like the newer styling better.

I do like the brighter monitor on the QX-16, but not the extra AC power cord. Even with an exceptionally convenient power switch (on the lower right front edge of the case, just below the screen), I still forget to turn it off.

Why did Epson do this? I suspect for two reasons. The QX-16 color monitor needs too much power to drive it from the main computer power supply, and because of the FCC RFI radiation testing hassles. (Electrical noise is easier to handle with a local power supply.) Since the color monitor needs a separate power cord anyway, it made sense to do the same on the monochrome system as well.

INTERNAL APPOINTMENTS

The user accessory bay is still located in the left side of the electronics housing and provides three expansion slots — the QX-10 has five.

The system reset button is located in the same general area as on the QX-10. A protective skirt around it — similar to that on later versions of the QX-10 —

Copy times of MS-DOS disks . . . are considerably less than on an IBM PC.

makes it difficult to depress, accidentally or otherwise. The power switch and port connectors are located in approximately the same positions as on the QX-10, along the right side and back apron of the computer.

No light pen connector is provided on the QX-16.

The top of the electronics case still houses the two floppy disk drives. Now grey in color, they are half-height units rather than black third-height drives used on the QX-10. Disks are loaded and removed with the same push button as before. When the top is lifted up and out of the way, it reveals a squeaky-clean interior. The switching mode power supply — which helps to avoid brown-out problems and a heavy transformer — is located on edge near the left side of the system.

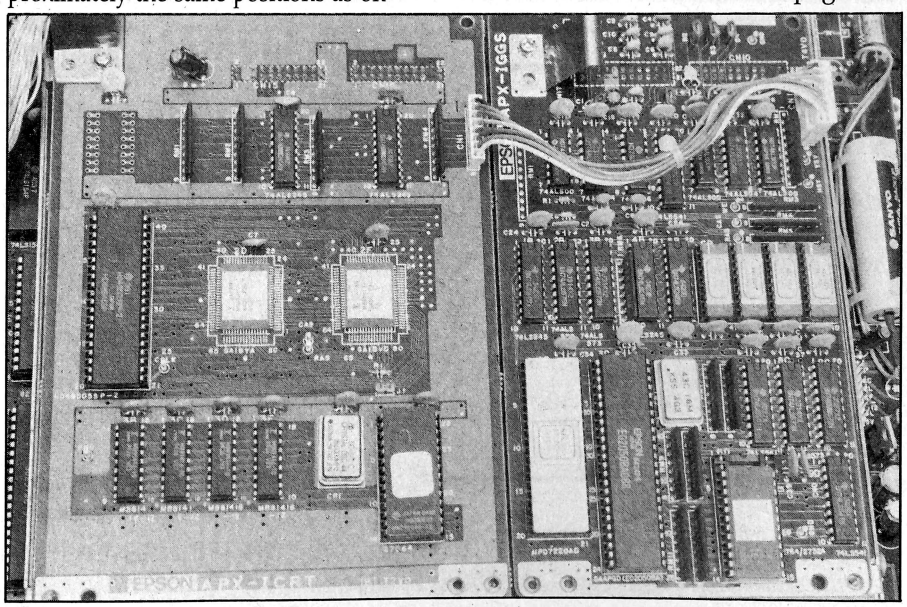
The disk drives are serviced by separate data cables, one for each drive. The QX-16 loudspeaker is mounted out of sight on the disk drive support bracket. On the QX-10, the speaker is located on the main printed circuit board.

The main electronics board covers most of the floor of the case, with two video controllers riding piggy-back on top. One controller features a NEC uPD7220A display controller chip, 128K of display memory and the same character generator used in the controller chip for a memory-mapped display used by the MS-DOS compatible crowd.

These display controllers are removed when a color controller is installed. I did not have a color controller available for examination.

The main electronics board is exposed when the video controllers are removed. This is done by unfastening the screws at the top and bottom of the aluminum

continued on page 57



TWO VIDEO CONTROLLERS. Left controller is used when running MS-DOS programs. It features a 68B45 video controller IC. Controller on right uses a NEC uPD7220A chip to manage the 128K of video display memory used with Valdocs, TPM and CP/M. Long cylinder to right of 7220 controller board is the nicad battery on main electronics board used to keep calendar-clock and CMOS memory alive when machine powered down.

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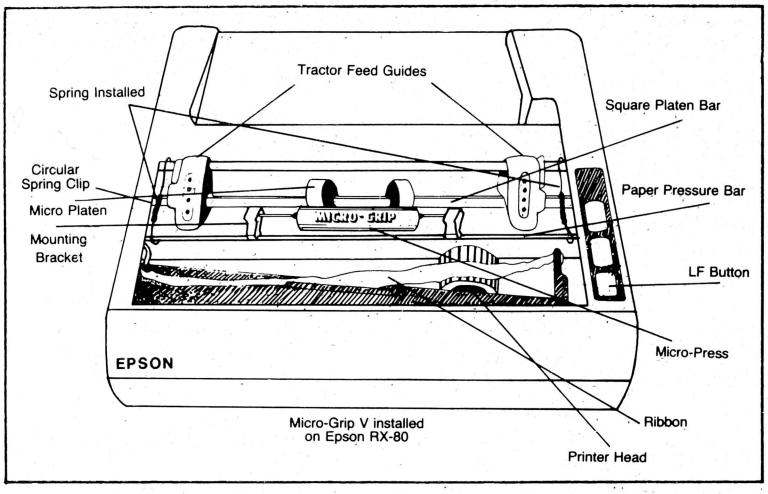
Note: Diagram is not drawn to scale!



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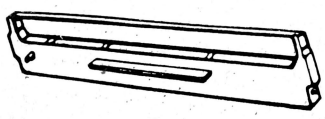

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continued from page 13

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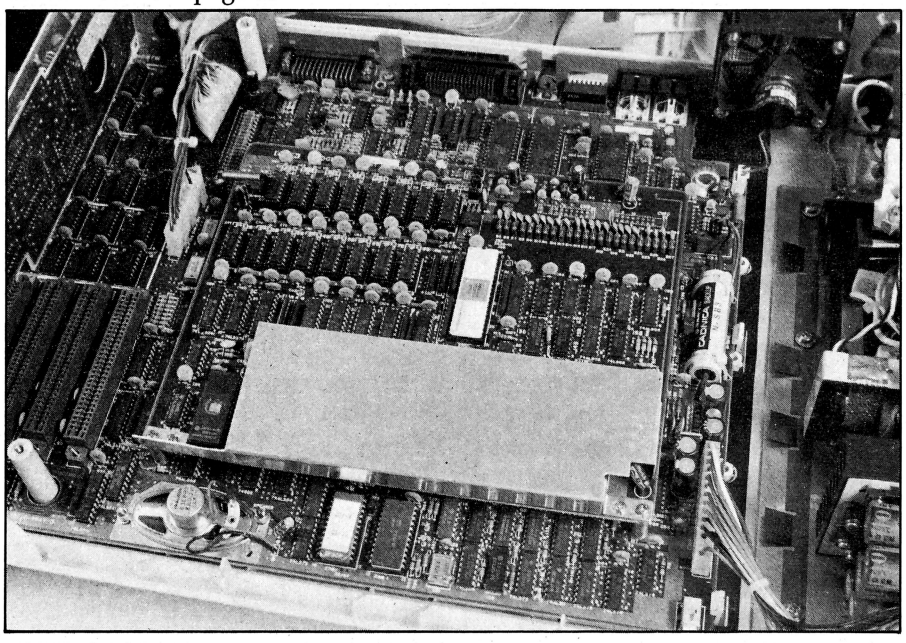


COVER OF QX-10 removed to show insides. Main printed circuit board supports video controller mounted piggy-back to it in center of photo. Power supply, on right, mounted on its side.

The video controller is supplied data from the main circuit board via direct memory access channel number one or with standard input-output (I/O) commands on the I/O bus. Figure three shows a simplified block diagram of the main video controller elements.

Screen display data is stored in the display memory by the 7220 controller chip when the electron beam is not scanning a raster line. This prevents flickering or twinkling by not updating memory while it is being read for display purposes.

The 7220 chip also generates timing pulses used to make the raster and addresses the display memory for the characters (or graphics data) that are to be shown on the screen.

The process works this way. First a horizontal synchronization pulse is sent to the monitor to move the electron beam to the left side of the screen. An address is sent to the video display memory , reading the character to be displayed.

The character — actually its ASCII (American standard code for information interchange) value — is combined with the line number from the 7220 controller to form an address for the character generator.

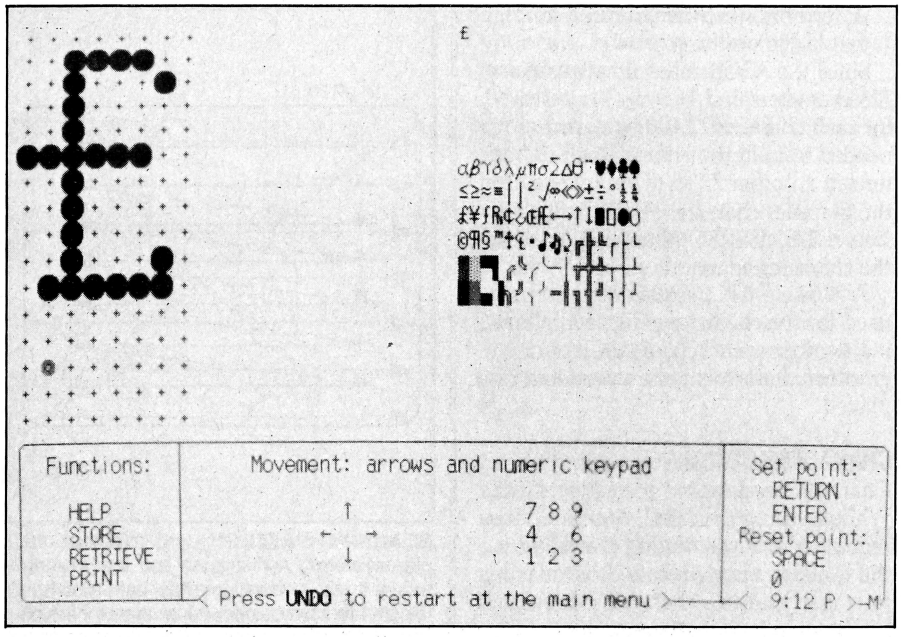
This address accesses a line of dots that make up the character to be shown on the screen. Additional logic serializes the dot data and sends it to the screen where we see it.

When the eighth dot of that character has been processed, the 7220 reads out the next character and the process repeats for each of the 80 characters in that row. A horizontal synchronization pulse is then sent. The next character line number is set. And another line of dots in that row are scanned and displayed.

After the sixteenth line of dots has been scanned and sent to the screen, the 7220 starts the process over by addressing the next row of 80 characters and selecting the first line of dots from the character generator. This row of characters is scanned out just as before. The scanning process continues until all 25 rows of characters have been "painted" on the screen. A vertical synchronization pulse is then sent to the monitor to pull the beam back to the top of the screen. And the process is repeated.

The scanning process takes time — but not much. Each horizontal line is scanned in 51.8 microseconds. It takes about 21.8 milliseconds to completely scan the screen from top to bottom, painting it over and over at a rate of approximately 45.8 times a second.

This is really all there is to the video display. As shown in figure four, the ASCII value of a character combined with the line number being scanned forms an address in the character generator. That address contains the combination of dots that is to be shown on the screen for that character. A character is modified by simply changing the pattern of dots held at the 16 addresses (one for each line of dots) for that character.



MATRIX APPLICATION program, part of VALDOCS 2, allows easy character font design. Design grid, on left, can be modified any number of times, with actual size character shown above graphics version of pound symbol, shown on left end of third row of graphics characters.

GRAPHICS MODE AND THE VALDOCS CONNECTION

The QX-10 video display controller can display both text and graphics characters. Graphics characters and data are read from the display memory and sent directly to the screen, entirely bypassing the character generator. Since the Valdocs text processor uses the graphics display mode, the character generator in the video controller has no effect on the Valdocs editor display.

The character mode is automatically selected whenever the QX-10 is turned on or reset, and most of the time when CP/M and TPM programs are run. Another clue is that the character mode is usually enabled when the screen cursor is flashing. A solid cursor indicates the graphics mode is being used unless it has been selected in the CP/M B release SETUP program.

THE CHARACTER GENERATOR

Figure five shows a detail of how characters are drawn on the screen of a QX-10. As mentioned before, each character is made from 16 lines containing up to eight dots. The top 12 lines form the character above the baseline. The bottom four lines are used for descenders.

By convention normal characters use only the left seven dots. The right dot is usually left blank to provide space between characters.

If two or more characters are to join or touch, the right dot can be used. No technical restriction exists for its use. Likewise all four descender lines can be used if desired, although normal descenders leave at least the bottom line blank.

The character generator is simply an EPROM. Either a 2732A-20 or a 2764-2 EPROM can be used in the QX-10. The -20 or -2 specification is important, indicating that the memory data will be available within 200 nanoseconds after the character address is presented to the chip. If a slower chip is used (like a -3 or -4 version) the display may twinkle, smudge or not be readable.

CHARACTER DATA

Character data is stored in the character generator starting at location zero. This corresponds to the ASCII NUL character which is normally a non-printing character. Since each character is made of 16 lines of dots, 16 locations in the character generator are reserved for each character. Location 16, then, contains the first line of dots for the ASCII SOH character, also non-printing.

The address of the first (or top) row of dots for a character can be found by multiplying the ASCII value of the character by 16. The letter A, whose ASCII value is 65, then, is found at location 1040. Since most computerists use hexadecimal notation for addresses, location 1040 becomes 410H, instead.

The table accompanying figure five shows the readout obtained from location 410H through location 420H of the QX-10 character generator, and what that character looks like: letter A.

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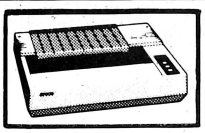

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A "one" is stored whenever a dot is to be shown on the screen.

Since the ASCII character set contains 128 characters and 16 bytes are reserved for each character, 2,048 bytes are needed to hold the entire QX-10 character set. Another 2,048 bytes are used for the graphics character set. This fills the four-K 2732A EPROM normally used as the character generator.

A 2764 eight-K EPROM can also be used for the character generator, allowing two complete sets of ASCII and graphics characters to be stored and displayed.

CHARACTER DESIGN

Character set design is a creative effort. While not a complicated process, it does require a lot of visualizing to minimize the trial and error process. It is amazing how many times a character can be changed and still not look quite right.

Character design can be done with a pad of graph paper or with the MATRIX application program available in Valdocs 2. The MATRIX program allows characters to be designed on the screen of a QX-10, and displays them in actual size.

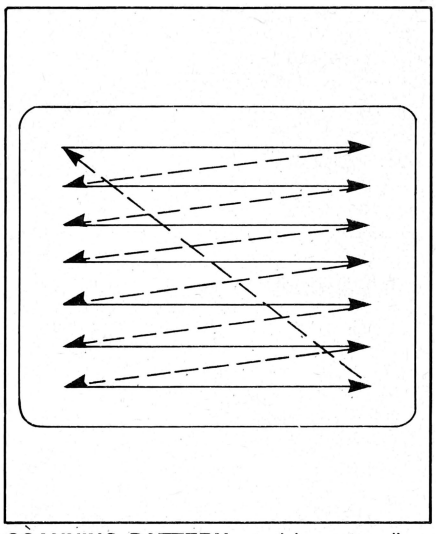
It does not provide the coding necessary for the character generator EPROM. MATRIX allows graphics characters to be changed in the Valdocs environment.

If you have Valdocs 2, MATRIX is much easier to use than pencil and paper for composing your character.

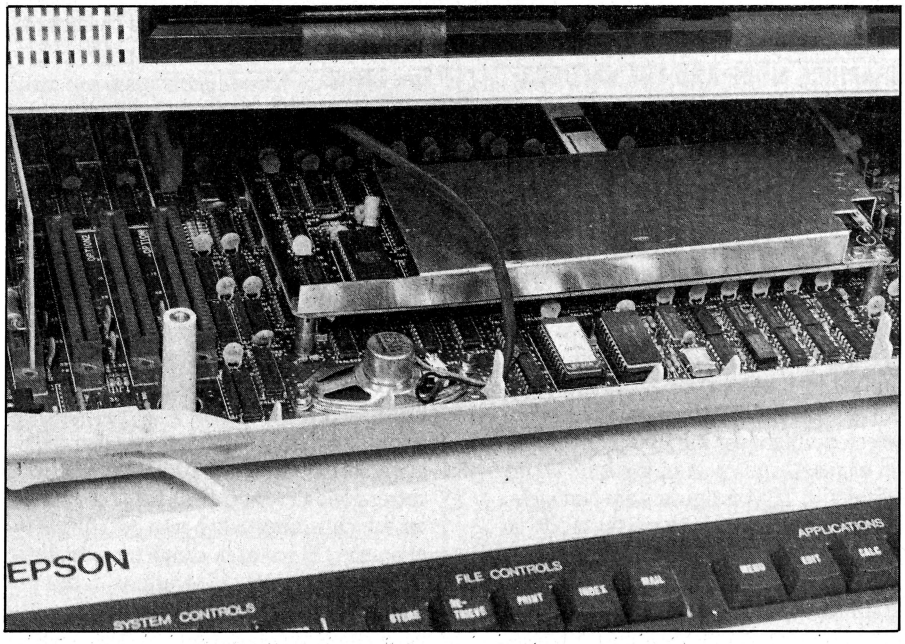
When designing with graph paper, I usually sketch out the character as shown in figure six, the English pound symbol that I ended up with as the fruit of my labors.

The artistic part of the job is to get what you think is a reasonable likeness of the character mapped out in a grid composed of 16 horizontal lines of eight cells each.

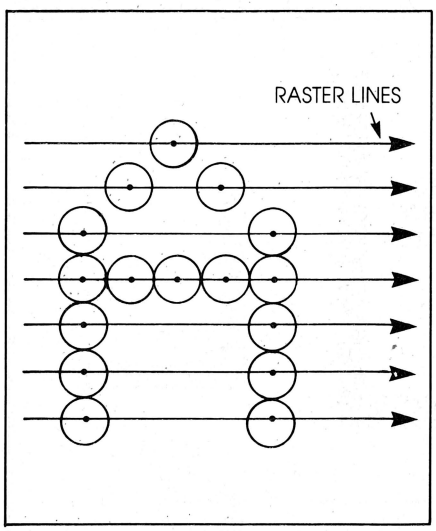
As you design the character, remember that the QX-10 screen does not



SCANNING PATTERN used in raster display systems. Active scan line is shown in heavy lines, sweeping left to right. Dashed lines show retrace path taken at end of each line and at end of frame. QX-10 raster consists of 400 lines.



IF CARE IS USED, character generator EPROM can be accessed with QX-10 cracked open as shown. Ground strap connecting between disk drives and loud speaker must stay in place if QX-10 is powered up in this condition.



DOT MATRIX characters are made up of dots placed on successive raster lines. Same general idea is used in dot matrix printers, except print head provides sweep of seven to nine raster lines for each pass on paper.

amount of hexadecimal arithmetic on your part, but the hexadecimal conversion table (two) will help.

My pound symbol (figure seven) is cut in half vertically. The left half is used to form the least significant digit of line values. The right half, the most significant values.

I usually place the dot values for each of the eight dots above the character columns (figure seven). These values left to right are one, two, four and eight; then repeating for the right half of the character one, two, four and eight.

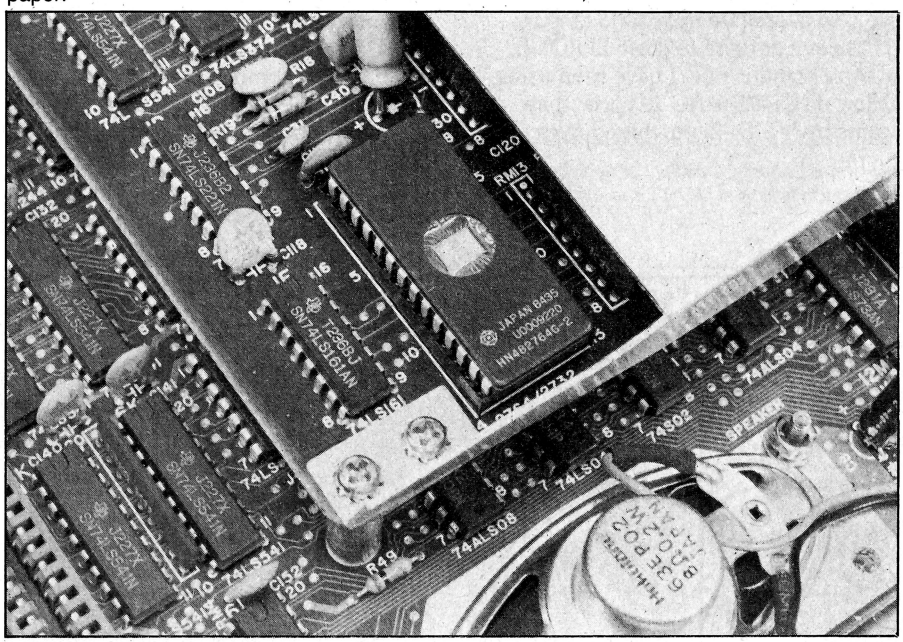
The coding task is simply to take a line from the character, total the dot values for the left half, convert that value to hexadecimal using the chart provided in table one, then place that value in the least significant position for that line.

This task is repeated for the right half of the line, but this time the value is entered as the most significant value. After all 16 lines have been evaluated, the code is ready to place in your character generator.

Again, referring to the pound symbol, line one has dot values of two, four and eight on the left side. These are added to yield 14. Using the conversion table, a hexadecimal E is entered as the least significant value for that line.

The right half has dots of values one and two. Thus a three is entered for the most significant value for that line.

Coding is not so difficult as it is tedious. And it is never fatal. Mistakes usually show up as messed up characters (MUCs), but only after you have



VIEW OF CHARACTER generator on video controller. EPROM shown is one being used to test pound symbol. Index of EPROM must be oriented toward back of machine.

skimp on any dot you have illuminated. Probably the hardest characters to design are those requiring a horizontal "wavey" line, such as those used in Arabic alphabets or on various accented letters.

It would be so nice to be able to cut a dot in half! Circular patterns can also be a problem.

CHARACTER CODING

After a character has been designed, it must be coded. This requires a minimal

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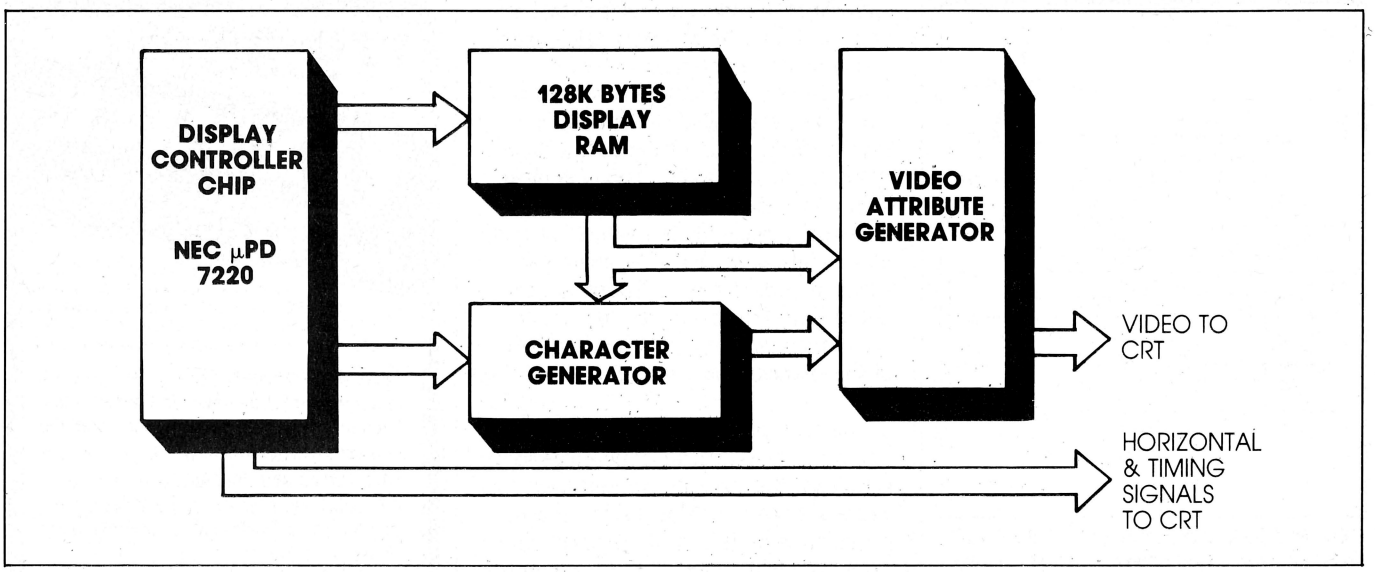

OVERALL BLOCK diagram of QX-10 video controller. 7220 display controller accepts date from the QX-10 CPU and places it in display memory. At same time it continuously refreshes QX-10 screen.

spent a half-hour fixing up the character, checking the coding and burning another EPROM.

MAKING A NEW CHARACTER SET GENERATOR

The final step is to place the code in a new EPROM. If you have access to someone who can program a 2732A-20 or 2764-2, and are truly serious, purchase one or more of these EPROMS.

Any brand is fine. I have been using Hitachi HN482764AG-20 parts (that company's 2764-2) purchased from Gerber Electronics. (800-225-1800, ask for sales. Gerber will take COD purchases of 25 dollars or more.)

These EPROMs will cost somewhere between 11 and 20 dollars, if purchased from franchised distributors. It is best to have several of them around so changes can be made while earlier tries are being erased.

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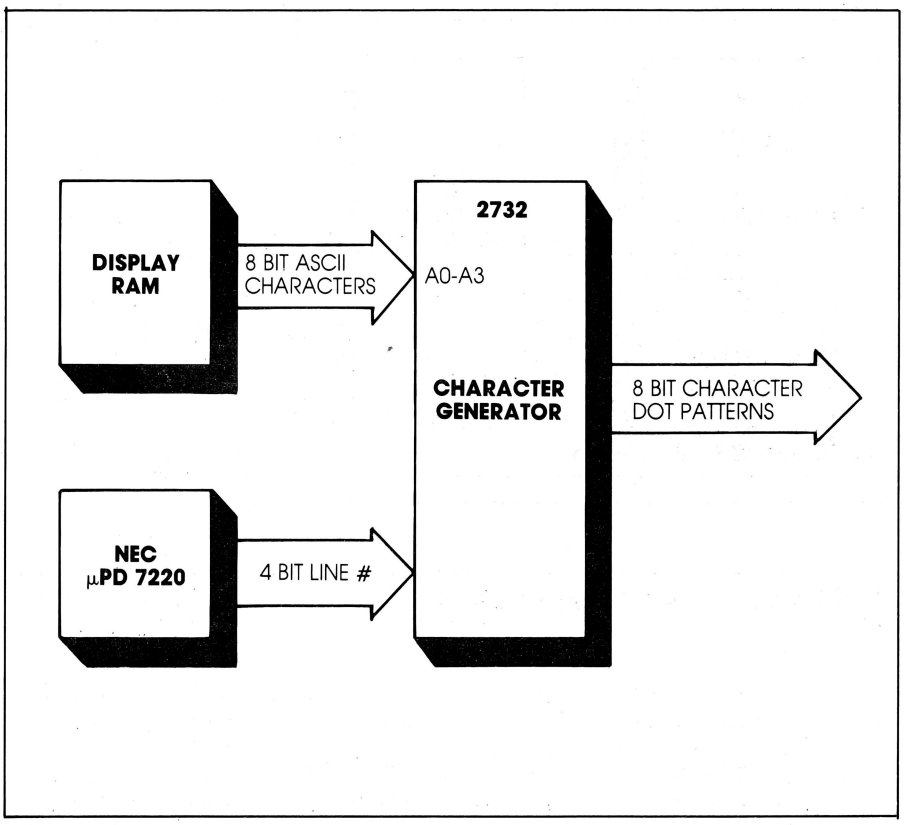

CHARACTER SET generator is provided an address based on ASCII value of character and line number being displayed. Data accessed from character generator EPROM is actual dot pattern displayed on screen.

YELLOW FLASHING LIGHTS

As long as you don't physically break something or zap the innards of your QX-10 with lightning, the following procedure is safe and will not hurt your computer. Even if your programming fails.

In general make sure power is disconnected from the computer while your hands are inside. If you have the nerve to open your machine, then you must assume the responsibility for any and all consequences that follow.

The case of your QX-10 can be propped open far enough to change the character set generator, yet leave the computer operational (photo three). The ground strap from the disk drives must be left connected to the screw securing the loud speaker as shown. The character set generator is the large IC next to the metal cover on the video controller board.

Referring to photo four, identify and remove the character set EPROM from the video controller. Read the contents of it into your programmer, then remove it from the programmer and place it in a safe place on conductive foam or wrap it in aluminum foil. You may also want to make an immediate safety copy of it on a blank 2732A at this time.

These custom stands for the QX-10 and Epson printers are made of heavy gauge clear acrylic with polished edges and soft feet. The QX-10's keyboard slides underneath when not in use to protect it and free desk space for other uses. Inserting disks is easier and screen is raised to a better viewing height. Sturdy printer stand provides front or rear access to paper and requires no extra desk space. Available for 80 or 100 series printers (specify). Order by mail or phone and pay by check, M.O. or C.O.D. Same day shipment and 20 day return policy.

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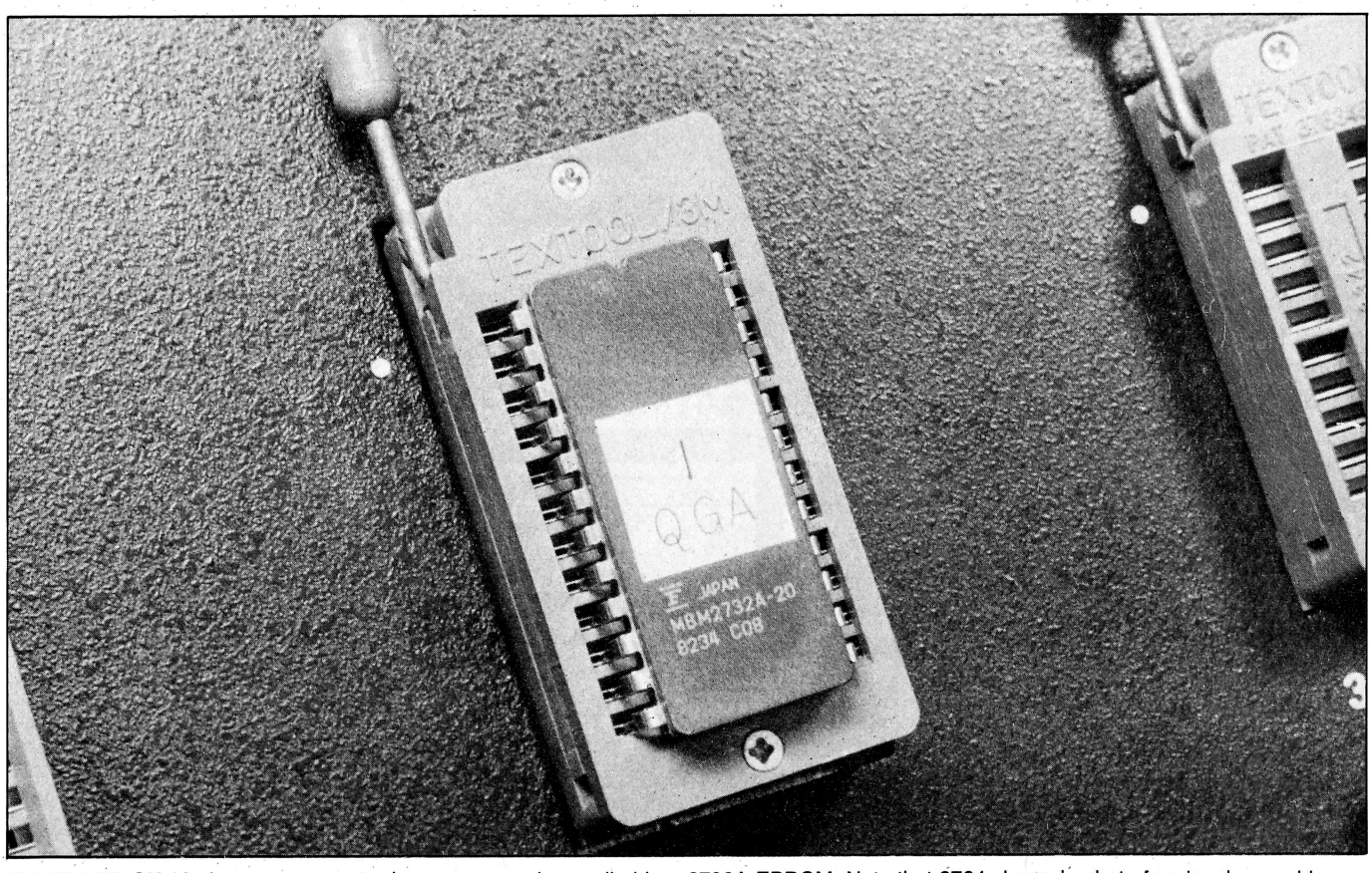


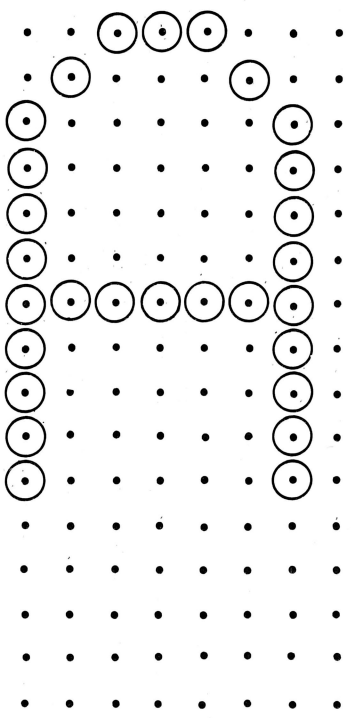
STANDARD QX-10 character generator in programmer is supplied in a 2732A EPROM. Note that 2764 shown in photo four is a larger chip. Computer is designed to use either type.

Next locate the character you plan to change in the EPROM memory. Multiply the ASCII value of the character by 16 to obtain the first line address of the character. In my case, I wanted to change the # symbol, an ASCII 35.

Multiplying 35 by 16 and converting to hexadecimal gave 230H as the first address of the character.

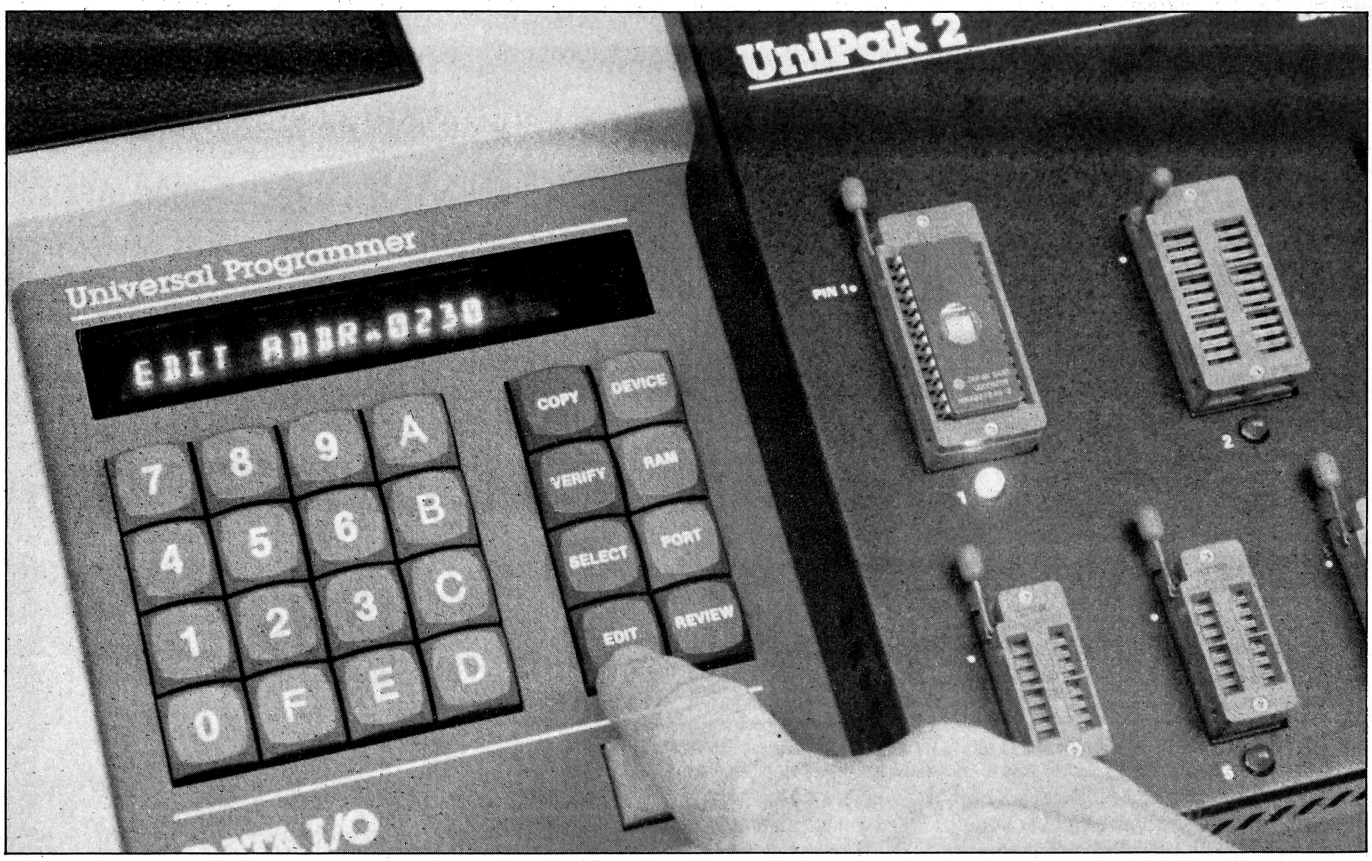
Using the editor in your EPROM programmer, examine that and the following 15 addresses, then plot this character on paper to make sure that the correct character has been identified. This is important. If the address calculation has been botched, the wrong character will be modified. This won't hurt anything except your pride. (I can't tell you how many times I've had that experience, and I'm far from lonely in this regard.)

After the character location has been verified in the programmer memory, key in the code you have developed, program the EPROM, and install it in the QX-10 . Make sure all the pins go into the socket and are not bent under the chip or outside of the socket. If this should happen, a bunch of continuous vertical lines will probably occur throughout the display. The index of the EPROM goes toward the back of the QX-10.

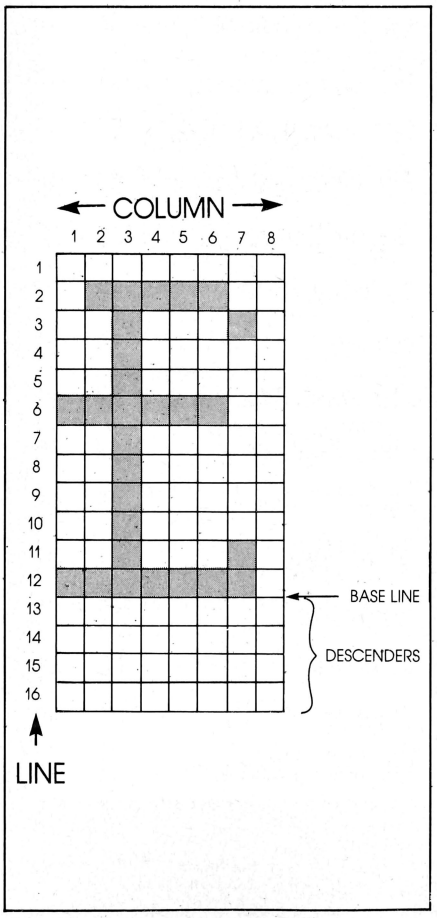


MEMORY LOCATION	VALUE
410	1C
411	22
412	41
413	41
414	41
415	41
416	7F
417	41
418	41
419	41
41A	41
41C	00
41B	00
41D	00
41E	00
41F	00

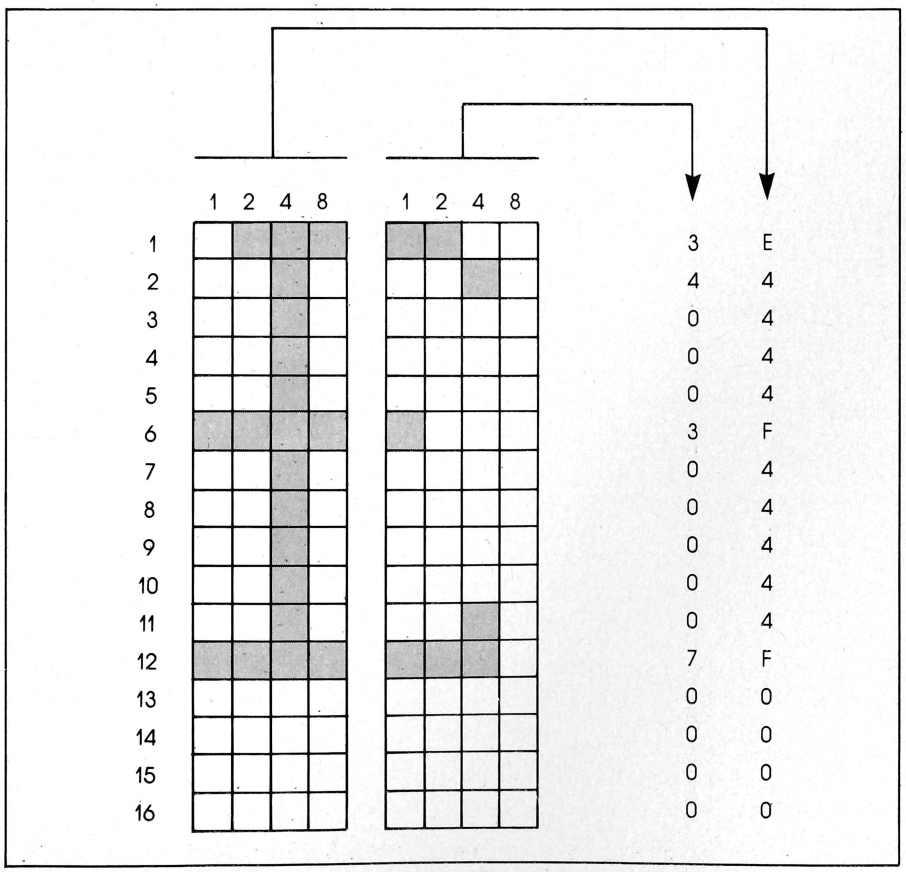
ACTUAL PATTERN read from standard QX-10 character generator. Hexadecimal values shown are as they appear on programmer consol and must be transmitted as shown in figure seven to arrive at "real" coding values.



PROGRAMMING the replacement character generator, a Data I/O Model 29 B — a Cadillac among programmers — was used. Any programmer that will handle a 2732A and allows memory to be edited can be used to reprogram character generator.



PAPER DESIGN of pound symbol.



CODING VALUES of pound symbol are calculated by first splitting character in half, then adding values of the desired dots, a line at a time. Desired values are then converted to hexadecimal (shown is column to right of pound symbol) and entered into programmer.

DECIMAL	HEX	DECIMAL	HEX
0	0	8	8
1	1	9	9
2	2	10	A
3	3	11	B
4	4	12	C
5	5	13	D
6	6	14	E
7	7	15	F

TABLE ONE. Hexadecimal conversion table. Using value of sum of dots in half-character line, find hexadecimal equivalent. Enter this as dot data for character generator.

Turn on the computer and check the new character by typing the character that it replaced.

True joy will be yours when it finally looks perfect, but don 't expect immediate gratification for your efforts. I've been designing character sets off and on for several years, and it took me seven cracks at it to get the pound symbol shown.

I am still not sure I like it, but it serves the purpose for now. Photo seven shows this character as it actually appears on the screen.

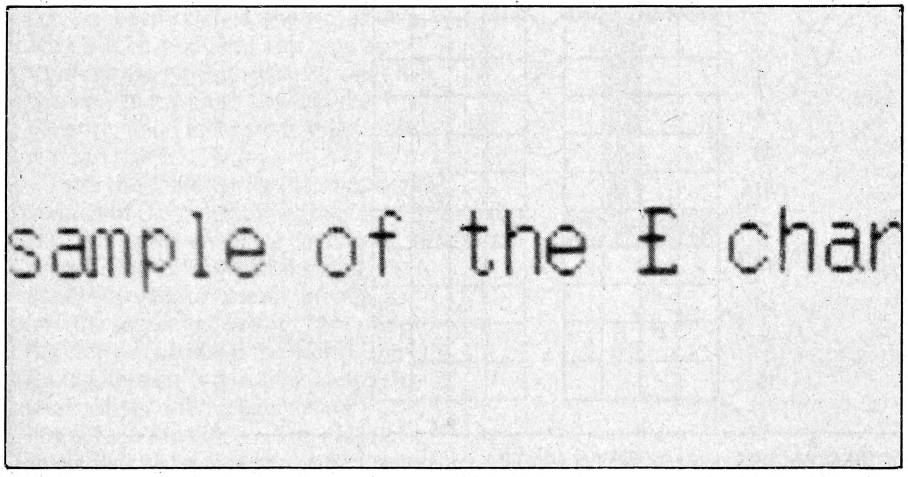
AFTER THOUGHTS

Be sure to take your time when you open up your computer. Nothing is so important that you should rush and risk damaging your machine.

The procedure is safe so long as you have the computer turned off, preferably unplugged. If you take care not to mechanically damage something, little chance exists for hurting the computer.

The biggest hassle is getting the character set EPROM in and out of the socket without skinning your knuckles. That little aluminum cover on the video control board makes it pretty clumsy with the top of the computer connected in the operating position.

The author has offered to assist with any questions you may have about this project, so long as you write, enclosing a stamped, self-addressed envelope to: Jim Hansen, Epson World, P.O. Box 250, Camden, ME 04843. — *Ed.*



THIS IS WHAT is displayed now on author's keyboard whenever he strikes # symbol key. Slight fuzziness is actual appearance of screen magnified to this size.

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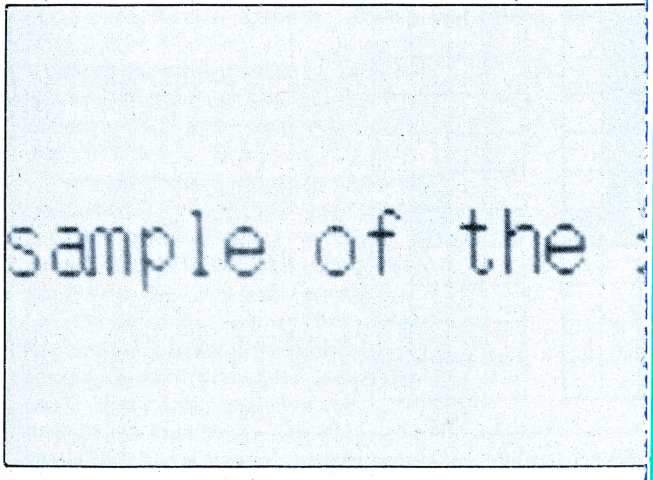

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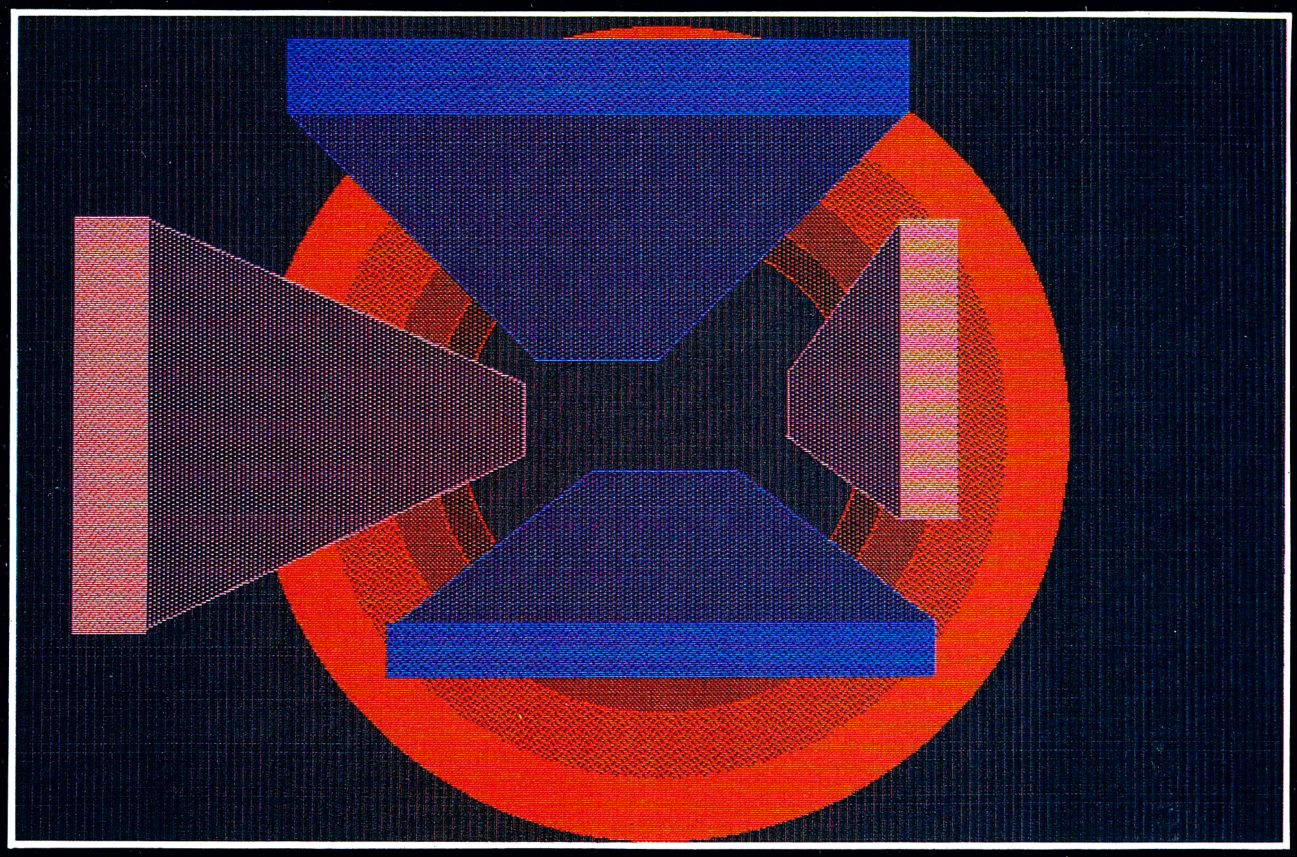

Living in a two-room cabin in the woods outside Portland, Oregon isn't as isolated as you might think. Technical writer and illustrator Melody Elwell keeps company with her Epson and Valpaint. Using a prototype version of Valpaint on a specially modified QX-10, Elwell creates graphics like this on an ink-jet printer.

Epson World of Art Contest

Your Epson computer and printer are latter-day charcoal and sketch pad, brushes and palate. If you have not yet discovered the fascinating world of computer graphics and the programming that goes with it, we've got a challenge for you. Epson World is sponsoring an art and graphics contest.

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The deadline for submissions is July 1, 1985. The winners will be announced in the Fall issue of Epson World. One of the color submissions will be the cover art of that issue. Winners will be displayed in an art essay on the inside.

Grand prizes will include Epson printers and plotters, runners-up will receive cash prizes.

If you'd like to enter the contest, please fill out this coupon below and send it to us to register. We'll send you an official entry rules sheet.

EPSON WORLD of ART CONTEST

Name:

Address:

Computer Used:

Program Used:

Printer Used:

Color Used:

SWITCH SOLVES HASSLE SAVES GEAR

Three-Way Parallel Printer Switch
General Interface Systems, Inc.
12909 Alcosta Blvd.
San Ramon, CA 94583
415-838-2683
Price: $169 and $179, two models

Do you own more than one printer for your computer? Or maybe a plotter and a printer?

Doesn't it drive you crazy when you have to move the printer cable back and forth?

The obvious solution is to get a switch box for the printer output of your computer. Then all you need do is poke a button to send output to whatever is hooked up to your computer.

Sounds wonderful, doesn't it?

The three-way Parallel Printer Switch made by General Interface Systems is a good quality unit that allows selection of three peripheral devices that use a standard Centronics parallel interface.

The unit is built in a molded plastic case. The push button switches are numbered from one to three, with corresponding markings on the connectors in back.

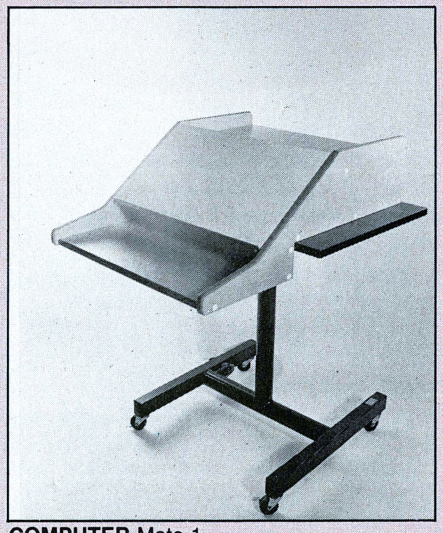
The switch box has been in use around here for the better part of a year with no problems of any kind. Operationally, the only "bad" thing about it is that it takes two hands to operate the buttons; it is so light that it has to be held while pushing the buttons.

We like it. It works well. It hasn't broken in over a year of use. Is there anything else that needs saying?

For your consideration: if you have several peripherals to drive from a single computer port, a switch box of some sort will avoid a lot of wear and tear on your (expensive) hardware.

But the cost can be deceptive. When you buy a switching unit, consider that you will need interface cables for each printer or what-not that is to be used, plus one from the computer to the box.

At anywhere from 25 dollars and up per cable, this will add significantly to the cost of the switch.



COMPUTER-Mate 1
at horizontal rest (we think).

YOUR QX-10'S VERY OWN DESK

Computer-Mate I
10867 Fruitland Drive
Studio City, CA 91604
818-761-5665
Price: $99.50 unfinished;
$139.50 finished

According to Cliff Johnson, manufacturer of this clean-looking piece of furniture, a designer friend of his made the first one for his QX-10. When Johnson saw it he thought he should go into production with it.

Made of Finnish white birch plywood, the Computer-Mate I is both handsome and practical.

Johnson (a custom cabinet maker by trade) puts a lot of love into these furniture-grade, practical work stations.

The desk features a removable copy holder and a keyboard shelf built to place the keys at the correct 26-inch height.

The unit is now in production. Johnson is looking for dealers.

P.S. In the "filling empty air with the obvious department," Johnson's press release attests that the "unit easily rests on any horizontal surface." Yep, we bet it does, too.

KMART'S GOOD, CHEAP BOX

Disk File Holder
Computermate
Available at Local Kmart Stores
Price: about $17

We never go to Kmart to buy computer supplies.

Why? Well, because everyone knows they only carry junky computers right?

Wrong.

While helping Santa fill his sled with toys for our house, we chanced across this little gem: a simulated wood box that holds 100 diskettes with a top that lifts up and slides down in the back.

Innards are felt padded and have eight removable dividers. The case also includes a set of labels for the dividers and a bunch of disk directory forms.

continued on page 42

SDRAW PUTS RSI BASIC TO ARTFUL USE

By Scott Cardozo

FOREWORD

More than any other piece in this issue, Sdraw represents the spirit of what personal computing is all about.

Why?

Because it is a practical tool, first made for the personal amusement of the author, then expanded for use by others.

And because it was and is a vehicle for self-learning and advancement. Scott Cardozo is 14. This is his first "big" BASIC program, and his first effort in technical writing.

We first saw Sdraw at a meeting of the Epson Band and Bugle Club late last fall. The membership was searching for an appropriate banner for The Bugler, its newsletter. Scott just happened to bring along a demonstration of his new program done on his just-acquired RSI BASIC. It was the precursor of Sdraw.

We asked Scott if he would write an article, something simple. "Say it, don't write it" was our advice. He showed up one Saturday afternoon with the text in a Peachtext file.

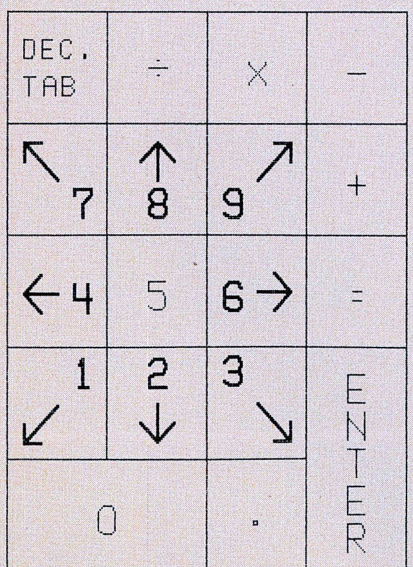
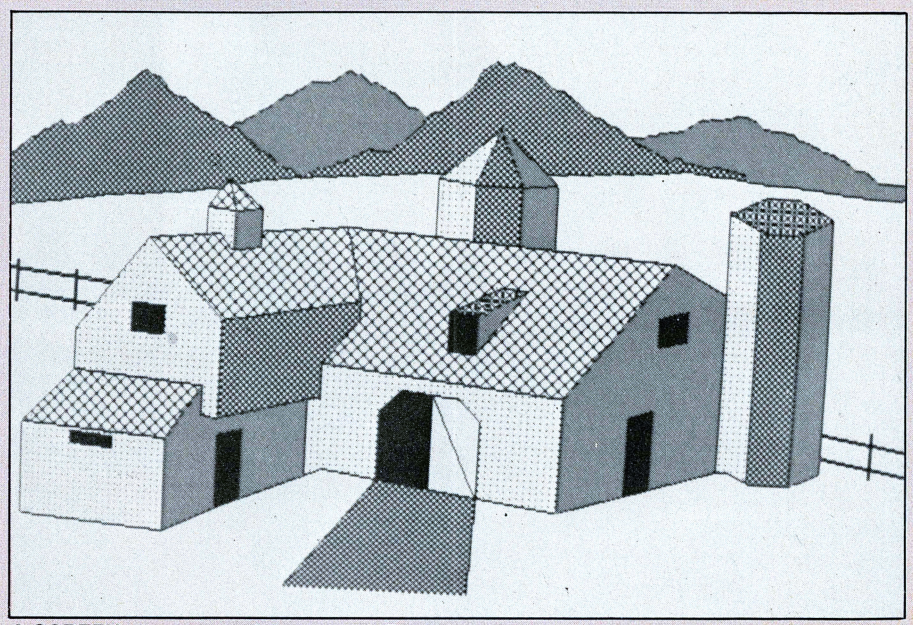


FIGURE ONE, cursor control assignments in numeric keypad. Multiply and divide keys also used to change cursor step size in erase mode.



A SCREEN photograph of Contoocook Farm drawing with shading done with Sdraw.

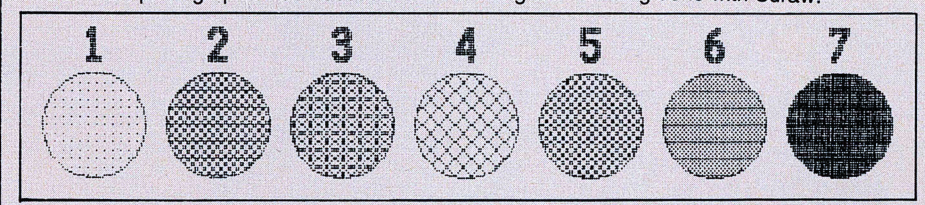


FIGURE TWO, fill patterns provided by RSI BASIC AND PRINTED ON AN RX-80 printer. Any may be used to fill an enclosed area.

Yes, we know the program is not quite a professional package, although with on-line help and pop-up windows it is pretty flashy.

The code itself shows a few inelegances, a near total lack of comments being one. But Sdraw is a responsive, useful and proven tool. As a result, a 14-year-old who is saving for his college education has managed to get himself published.

Scott said he would take the money from this article and buy a copy of Turbo Pascal . . . and maybe a typing course. He's still a two- fingered typist and has to wait a couple more years before his school will let him take a typing class.

This is what personal computing is all about. — Ed.

The QX-lO's spectacular graphics is common knowledge, but until RSI BASIC came on the scene, graphics for most of us was locked away in the deep recesses of the Valdocs GDRIVER module.

Only the gods at RSI seemed to know anything about QX-10 graphics. Epson has been no help in this matter.

As luck would have it, I was given a copy of RSI BASIC this past summer, and at last got a chance to play with QX-10 graphics. I started by writing

continue to page 43

What would you say to a new lap Apple® IIc and powerful like the

"GIMME."

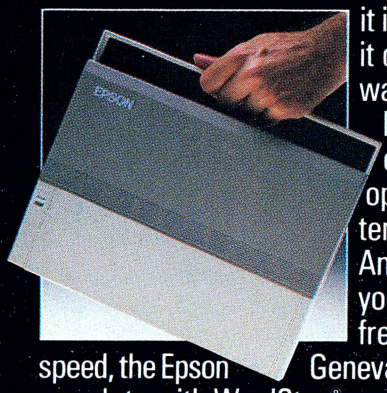
Of course you want it.

The Epson® Geneva.™ A full-function, battery powered lap-size computer with 64K of memory, an 80 character 8-line screen, a big, responsive keyboard, microcassette storage, plus four powerful, popular programs on ROM capsules, all included free.

All Epson quality. All for $995.

Now that's technology.

If the Geneva is small where it counts, it is also big where it counts. In software, there's the big advantage of a universal operating system—CP/M.® And to start you off at freeway speed, the Epson Geneva comes complete with WordStar.® Also included is Portable Calc, an electronic spreadsheet, Portable Scheduler, and Microsoft® BASIC.



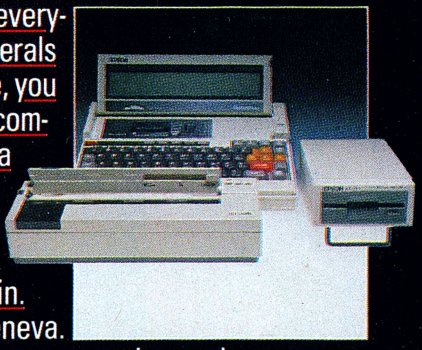
Want more?

E P S O N

size computer that's sexy like the $3000 H-P Portable... all for $995?

The Epson Geneva offers a complete collection of advanced, battery-powered mini-peripherals. Customize your perfect computer system with a direct connect modem; an extra 120K of RAM disk memory; a 320K 3½" disk drive; there's even an amazing four-pound 80-column printer.

And here's the best part. When you put an Epson Geneva and every-one of these peripherals into one briefcase, you have a complete com-puter system for a thousand dollars less than where other powerful portables begin. The Epson Geneva.



You know you want it, so when are you going to get it. For the name of your nearest Epson dealer, call (800) 421-5426. In California, call (213) 539-9140.

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G E N E V A

New Titan Board

YOU MAY FIND THAT A 600-DOLLAR INVESTMENT CAN PUT ALL THE COMPATIBILITY YOU NEED INTO YOUR QX-10

QX-PC2
Co-Processor Board for Epson QX-10
Titan Technologies, Inc.
310 West Ann St.
Ann Arbor, Michigan 48104
313-662-7777

Review by Technical Staff

MOST MAJOR SOFTWARE packages are being written for MS-DOS compatibility. That's frustrating for QX-10 owners who need programs, particularly business oriented ones, not available in CP/M editions.

Even more frustrating — and frequently financially painful — is that some MS-DOS programs that have been translated into CP/M configurations are nearly useless because of memory limitations caused by CP/M 2.2.

You're not likely to discover this problem until you've paid for the program, and it's too late to return it.

An example is Microsoft's Multiplan spreadsheet. Originally written for use with MS-DOS, the CP/M version occupies well over 50K of memory when loaded in the QX-10. This leaves about 15K for the spreadsheet data area. The program is rendered nearly useless as a result.

BUT TAKE HEART

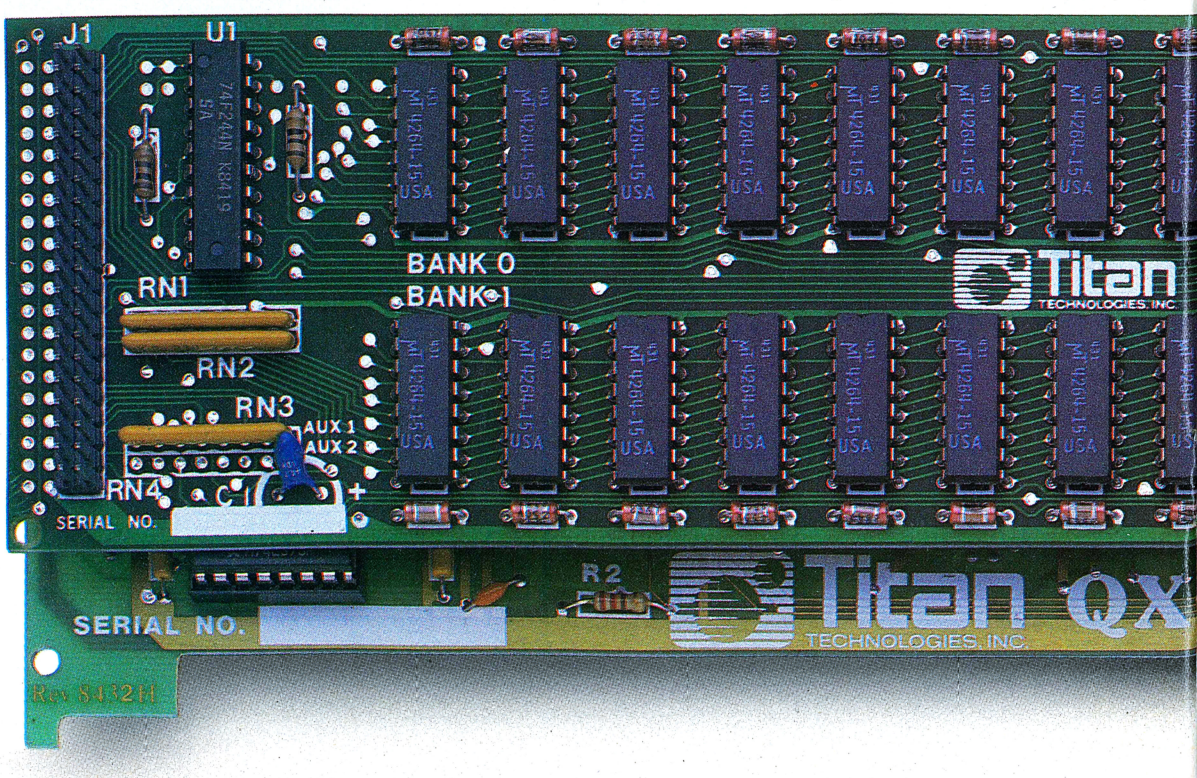
MS-DOS programs can be directly run on the QX-10 with the QX-PC2 co-processor expansion board from Titan Technologies.

This is the second version of a QX-10-8088 co-processor from Titan, and although externally similar to the old QX-PC model it offers increased compatibility with the IBM PC and better function key replication.

The QX-PC2 comes in a kit containing the co-processor electronics board, a Titan-green reprint of the MS-DOS users'guide, an overlay for the HASCI-2 keyboard identifying the function keys used with the MS-DOS operating system, two floppy disks, the QX-PC2 start-up guide and a set of keycap labels.

The Microsoft assembler, MS-DOS Macro assembler manual are not included in the package.

The basic QX-PC2 provides the QX-10 with an 8088 co-processor and 192K of MS-DOS memory. Memory in the QX-PC2 can be expanded in blocks of 64K



to a maximum of 512K.

Titan and Comrex offer pretested memory kits for expanding basic QX-PC2 to 256K. A "piggy-backing" memory expander board (for more memory sockets) is available from Titan and allows expansion up to 512K.

Software provided on the floppy disks include a CP/M program (QXPC.COM) to test and initialize the co-processor board — on the pre-boot disk — and MS-DOS 2.11.

Installation of the board is relatively simple if you are a dedicated CP/M user. It begins by first copying the original pre-boot and MS-DOS disks to make working copies, then placing CP/M 2.21 or 2.25 (not provided by Titan) on the pre-boot disk.

CP/M 2.25 is required if a hard disk is to be used with the QX-10.

It allows partitioning so that CP/M, TPM-II and MS-DOS files can all be stored on it. Floppy systems can use CP/M 2.21 as always. Users should contact an Epson dealer for copies of these operating systems.

The QX-PC2 board is installed in the QX-10 accessory bay.

Titan's start-up guide refers the installer to chapter three of the QX-10 operations manual for installation procedures. These involve removing power from the QX-10, taking off the accessory bay cover and plugging the QX-PC2 board into an empty expansion socket.

It takes fewer than five minutes.

Operation of your QX-10 is not affected by the Titan board until it is activated. Valdocs, TPM and CP/M programs are normally not aware of the co-processor. All will run normally with the QX-PC2 board installed.

The QX-PC2 is activated with the utility program QXPC.COM on the pre-boot disk.

This program can be executed by calling it up manually from the CP/M A prompt or by the CP/M autoboot facility.

QXPC.COM runs a set of diagnostics on both the 8088 processor and whatever memory is available on the co-processor board, then prompts for the MS-DOS disk. When the MS-DOS disk is installed, the internal QX-10 calendar-clock is read (the normal MS-DOS date and time request is not presented) and MS-DOS is ready to run about 90 percent of the programs available for the IBM PC.

FLOPPIES EASY, HARDS NOT-SO

Users of floppy disk-based systems can continue to use the QX-10 as always.

The only caution necessary is that disks made and used with the QX-PC2 are formatted for use with IBM PC computers. These are not usable in the CP/M-Valdocs environment unless a utility program such as UNIFORM is used to change the disk drive configuration.

But life is not so simple for hard disk-users. Different operating systems store files on disk differently. Such differences are mutually destructive.

CP/M 2.25 (and releases above that) provides a partitioning system for Comrex hard disks so that both CP/M and MS-DOS can share space on them.

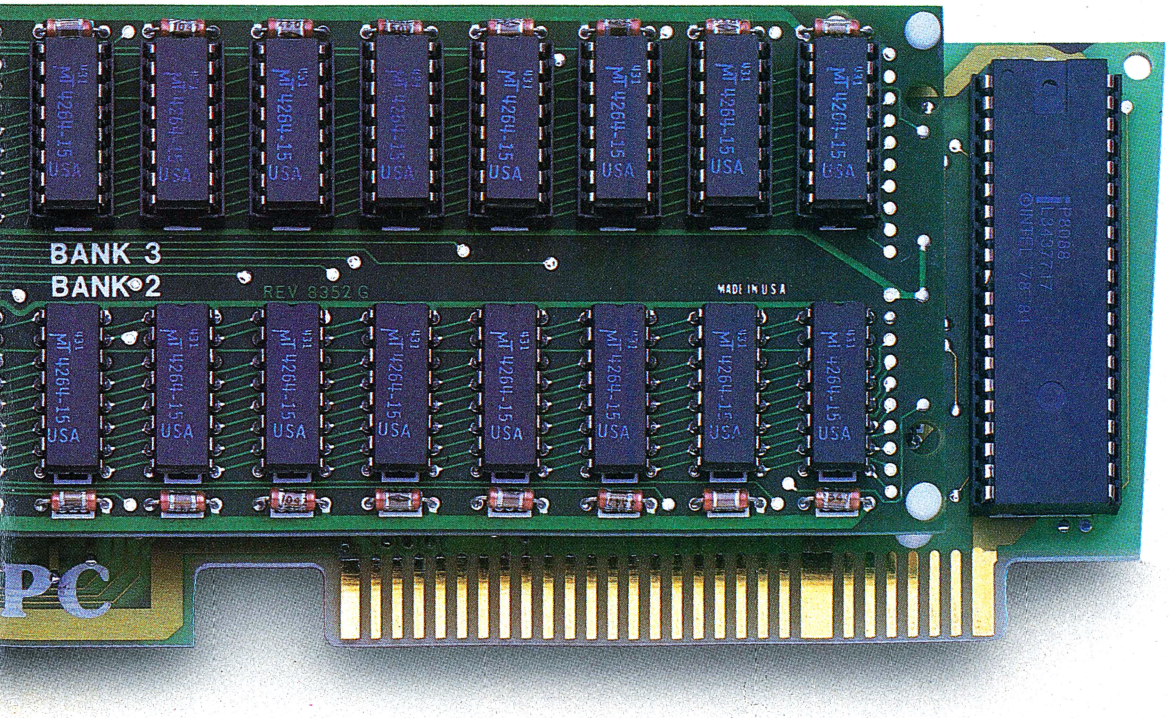
A detailed procedure for the partitioning process is given in the start-up guide. It involves taking everything off the disk, reformatting and partitioning it, then reloading all the CP/M files and finally, reformating the section for MS-DOS.

Once a hard disk is partitioned, CP/M 2.25 or higher must be used. Lower versions do not recognize partitioning and will destroy the MS-DOS files. For the same reason, Valdocs 1.18/1.19 cannot use a partitioned hard disk either.

Valdocs 2 recognizes partitioning, but be sure to read the Valdocs manual about it before using a partitioned hard disk.

The bottom line is this: if a hard disk is partitioned, use CP/M 2.25 or higher and Valdocs 2

continued on page 44



APPLICATIONS THAT **MAKE EPSON** WORK

The applications software programs listed here are only a few of the many products that make Epson computers workplace workhorses.

Each issue of EW will list as many as possible that come to our attention. If you are a specialized applications program developer, please let us know about your products. We will put them in front of our reader who are Epson owners and users.

The products listed are neither guaranteed nor implicitly endorsed by Epson America, Inc. or Epson World magazine.

If you'd like more information on any of these products, please circle the appropriate numbers on the Reader Service Card bound into this magazine. Material will be sent directly to you from the vendor.

ACCOUNTING/ BUSINESS MANAGEMENT

SMART FORECAST 50
QX-10
System for forecasting, statistical analysis, and projections. A combination of intuitive statistical analyses and graphics for professional planning and management.

Smart Software
392 Concord Ave.
Belmont, MA 02178

AGRILEGER 51
QX-10
Agrileger software produces the Schedule F Report for tax purposes, double entry accounting system modified for the agricultural enterprise, as well as income statement, balance sheet, budgets, and financial analysis capabilities.

Small Business Computer System
3815 Adam Street
Lincoln, NE 68504

INTERACTIVE ACCOUNTING 52
QX-10, QX-16
Interactive accounting is a service program which allows users to record minutes, constituency data, appointments, and other daily activity information.

Aid Data Systems
Route 3 Center, Suite 6
PO Box 750
Millersville, MD 21108

TAXWIZ 53
QX-10
Taxwiz is a user-friendly system for budgeting, financial planning, and tax filing purposes.

Advanced Micro Systems
26188 Adamor Rd.
Calabasas, CA 91302

PROFESSIONAL PERSONNEL MANAGER 54
QX-10
This program is one of four exceptionally useful business tools designed for more efficient managing. PPM allows managers to keep detailed records on all employees.

Best Programs
5134 Leesburg Pike
Alexandria, VA 22302

EXECU-TIME 55
QX-10
Professional time management and scheduling program for sales reps, secretaries, and middle management use.

Advanced Productivity Software
2565 East Chatham Avenue
Suite C
Fullerton, CA 92631

FINANCIAL MANAGER 56
QX-10
For farming purposes, the financial manager provides the following: data entry accounting, 319 main accounts with 99 subaccounts per main account, unlimited enterprise analysis, production, location, storage inventory information, and asset and loan analysis. It produces management reports such as balance sheets, modified cost and market values, income statements, control sheets, and transaction summaries.

Farm Management Inc.
1208 South Cedar Road
New Lenox, IL 60451

CLIENT ACCOUNTING SYSTEM 57
QX-10
Aimed at CPA and bookkeeping needs, this program provides client payroll reporting, journal entries, custom financial statements, and other report writing capabilities.

Basic Business Computers
278870 Altamont Circle
Los Altos, CA 94022

STATE PLANNING PACKAGE 58
QX-10
Professional financial planning, pension, profit sharing, and investment comparison capabilities are provided by this software package.

Benefit Analysis, Inc.
842 Lancaster Avenue
Second Floor
Bryn Mawr, PA 19010

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C. **Which Epson computer do you own?** 1. ☐ QX-10 2. ☐ QC-10 3. ☐ HX-20 4. ☐ Geneva

D. **Which Epson computer do you intend to purchase?** 1. ☐ QX-10 2. ☐ QC-10 3. ☐ HX-20 4. ☐ Geneva

E. **Do you own an Epson printer?** 1. ☐ Yes 2. ☐ No

F. **If you answered "No" to Question E, do you intend to purchase an Epson printer within the next 6 months?** 1. ☐ Yes 2. ☐ No

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E. **Do you own an Epson printer?** 1. ☐ Yes 2. ☐ No

F. **If you answered "No" to Question E, do you intend to purchase an Epson printer within the next 6 months?** 1. ☐ Yes 2. ☐ No

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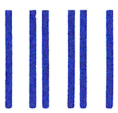

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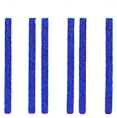

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QX-10
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MI-AMOR 60
QX-10
This user friendly software was designed with realtors, bankers, CPAs, lawyers, financial planners, and accounting departments in mind. It provides users with amortization and loan capabilities, as well as financial planning functions.

Budget Computer
160 S. Second St.
Milwaukee, WI 53204

LEXITER 61
QX-10
This office management system was designed for time-billing offices such as lawyers, doctors, accountants, and other service oriented professions.

Contract Research Software Corporation
Two Illinois Center
Suite 2222
Chicago, IL 60601

REAL ESTATE CLOSING PACKAGE 62
QX-10
This software produces general calculations and prints the government required RESPA form for real estate closings. It also creates buyer's closing statements, seller's closing statements, and disbursement statements. A helpful tool for lawyers, real estate brokers, and bankers.

Conlan and Tooker
180 W. Third Ave.
Okeechobee, FL 33472

DATA BASE

DB PACK 63
QX-10
DB Pack is aimed at individual users and small businesses. It is a management system which creates reports, provides inventory control, and keeps track of lists. This data base software is ideal for beginning users as well.

Compu-Draw Software House
1227 Goler House
Rochester, NY 14620

COMPUTER GRAPHICS

PRINTER BOSS 64
QX-10 Printer
All printer capabilities are on one disc to reduce complicated user procedures. Letter quality printing, sideways printing, and a variety of character styles are available.

Speer Research Corporation
30 Wilson Avenue
Rowayton, CT 06853

DATABASE

COMPULOG 65
QX-10
Compulog was intended for library special collections. It allows printing online and reporting on all fields of record.

Embar Information
1234 Folkston Ct.
Wheaton, IL 60187

EDUCATIONAL/ RECREATIONAL

PUBLIC DOMAIN DEVELOPMENT PROGRAM
QX-10
PDDP was created to serve education professionals with relatively unlimited teaching resources.

Scholastech
PO Box 1768
Cambridge, MA 02238

SCIENTIFIC

CELESTIAL NAVIGATION 67
HX-20
An electronic navigation assistance program created for maritime professionals.

Arthur Merrill
3390 Landen Street
Camarillo, CA 93010

SYSTEMS/ UTILITIES/ LANGUAGES

BARCODE 68
QX-10, HX-20
This diverse barcode software creates labels, time/attendance reporting, automation, and record keeping capabilities for a variety of user needs.

Cardinal Computers, Inc.
1600 N. I-35E
Suite 109
Carrollton, TX 75006

GENERIC PACKAGE 69
QX-10
This generic software includes a log system, file catalog capabilities, and a user's guide.

Computer Thaumaturgy, Inc.
1212 Miami Valley Tower
40 West Fourth Street
Dayton, OH 45402

HOME MANAGEMENT 70
HX-20
A guide to checkbook reconciliation. Capabilities exceed that of pocket calculator in aiding the user in balancing checking accounts and budgeting.

Technicon Corporation
TIS R&D Div., Mail Stop 37
511 Benedict Avenue
Tarryton, NY 10592

continued from page 31

works: The editor, via the system index, obtains access to the file you wish to edit. The cursor is positioned to the same spot in the file as it was when the file was saved. During the edit process a duplicate of the original file is made from the beginning to the present cursor position. The copy is saved as a temporary file (.TMP)

When the file is saved, the temporary file is simply merged with whatever remains in the original file that hasn't already been copied. If the same index is used, the original file is deleted from the disk. If your editing is only done at the beginning of the file, then it's possible to edit a larger file than with the version 1 system.

You can see why it's best not to attempt to edit a file known to be larger than half your disk capacity in either system. Printing a file in Valdocs 2 causes a temporary duplicate to be made, just as in version 1.

Hard disks let you have larger files. You can move blocks of text or a global replace. The hard disk is faster, and when large documents are involved, it's the only way to go.

The biggest problem with a hard disk is that sooner or later you, it, or the computer is going to make a big mistake. Poof . . . everything stored on it is gone. Then you'll wish you had copied everything on floppy disks for recovery purposes. It's far safer and more practical to keep documents reasonably small. Any mistakes will be smaller and recovery will be quicker and easier.

There's a spell checker on the way for Valdocs 2. Users of version 1, through a relatively cumbersome procedure, use the Peachtree spelling checker (See Tips and Tricks this issue). There's no ideal solution to everything yet. Most of your problems with large documents are simply that you're stressing your system to the limit. You need to have the hardware capability to handle these massive documents. The sooner you get a hard disk, the happier you'll be.

— J.H.

BUNK!, HE SAYS

I am a subscriber to Popular Computing magazine and must comment about the Epson cover article in their February 1985 issue. It was grossly unfair to the Epson organization and was a misleading disservice to your readers. In short, it was bunk.

It seems to be a fad for computer industry insiders to denigrate the Epson QX hardware and Valdocs software. The Epson QX/Valdocs package is just too good and too easy for real people to use to satisfy the ego-tripping hackers.

Shortly after reading Popular Computing, I received the Epson World premier issue. It's difficult to believe that Jim Hansen's article, QX-10 From the Beginning to Valdocs 2. 0, was covering the same topic as J. Sacks' piece in Popular Computing. Hansen's article was factual, useful, and reflects my experience with the QX-10/ Valdocs package. Sacks' article was a misleading distortion.

For small-business owners and professionals seeking a microcomputer that's easily and consistently productive, and functionally reliable, the QX/ Valdocs package can't be matched. I believe the hackers, who appear to be in control of this great new industry, haven't the maturity to accept the truly user-oriented concepts wrought by Chris Rutkowski.

I don't know Mr. Rutkowski, but I tip my hat to him. He has made ordinary users masters of their machines. Ordinary users are those of us who must justify purchase and use of a computer based on productivity that comes from ease of use. I agree with Rutkowski' s prediction — the others will come around eventually.

J.C. Treager
Tulsa, OK

We agree that Valdocs and Epson have been getting poor coverage in the popular press. Why is it that of all the computer product lines sold in this country, Epson and Rising Star alone receive coverage like this?

We encourage all readers to write the newspapers and magazines running such articles. Send us copies of your letters and any responses you may receive. You can expect to see more on this subject in future issues of Epson World. — Ed.

I've read the first issue of your new publication. The article by Hansen is the only decent description of Valdocs 2 that I have been able to find. This includes the impossible-to-get Rising Star Industry's brochure and the article in Interface Age, Volume 9, Issue 10.

I'll consider a subscription after I see your second issue.

Henry S. Markus
Salem, OR

WAITING FOR QX-PC2

Please find enclosed my check for a charter subscription to Epson World.

I noticed that the article about Titan Technologies in your column on New Products says the PX-PC2's availability to QX-PCl (the older model) owners was to start October 22, 1984.

The actual situation is that we original QX-PCl owners might not be able to get the new version until the Spring of 1985. The QX-PC2 is presently only available from Epson dealers at the retail price of 595 dollars.

R.A. Livingston

The facts that you present have been confirmed with Titan and are essentially correct. Titan is mailing an update-upgrade offer to all registered owners of the QX-PCl coprocessor board sometime in February. The update response has been so great that turnaround times are stretching considerably beyond what Titan had originally expected.

See our review of the QX-PC2 board in this issue. — Ed.

MORE RSI SUPPORT

Let me thank you for a great magazine devoted to the family of Epson users. I found the articles in your first issue interesting.

As I read about the evolution of the QX-10, I was impressed by the efforts by all to get the system to the market.

I must take exception, however, to the opening statement by Carl Cramer on the efforts of Epson to encourage programmers interested in the QX-10. I've tried to get various pieces of information from many sources : my dealer, local distributor and Epson themselves.

My greatest disappointment came from Epson. I called them to ask about a book on programming in Valdocs. The person who answered my call laughed at me, saying he didn't know the book came from Rising Star Industry (RSI) and hung up. How can I take that as a supportive attitude?

Many magazines and books cover CP/M. I would hope that you'll devote some of your magazine to TPM.

Dennis Lewis'
Chicago, IL

CAN'T FIGURE DISK CONFIGURATION

I was beginning to wonder if there were any publications for Epson users. So impressed by your magazine, I was compelled to write to you using my QX-10.

I use my Epson primarily for word processing. I'm a freelancer and also a contributing editor for a national trade publication serving the electrical con-

struction industry. Since my manuscripts must be readable, I purchased a Comrex CR-1 ComRiter at the time I bought the Epson. The only complaint I have is that ribbons are expensive.

I thought I'd solve that problem by purchasing an Epson RX-80 printer and use that for producing draft copies. The ComRiter would be for the final manuscript.

The initial problem has been configuring for each printer on the SETUP.SYS. This takes some time. When I spoke with the people who sold me the machine, they suggested I configure a separate disk for each printer.

I did this. However, when I load a program, and check the SETUP.SYS, I find it comes up configured for the last printer used. Is this due to the fact the data from the drive disk A is left in the memory? Have I done something wrong?

I've sent under separate cover my subscription order. Thanks for your help.

Robert A. Germinsky
Flemington, NJ

The reason you can't configure a disk for each of your printers is simple: the setup data is stored in the CMOS RAM maintained by the battery. This is inside the QX-10, not on the disk.

You'll find if your documents are "plain" (with just bolding and perhaps underscoring) most of them will print in good shape on the CR-1 using the RX-80 setting. But don't send it graphics. It will go into spasms if you do. — *J.H.*

DON'T FORGET THE NOVICE

The premier issue of Epson World was great. Please keep in mind that many Epson QX-10 owners are like me — an absolute novice who needs very basic articles on how to use the computer, especially in word processing.

I look forward to the next issue.

Dick Abuhouson

The Missing Link™

PX to PC File Transfer

is now available for the Apple *II*, Apple MacIntosh, and the IBM PC.

For more details, contact your regional Epson distributor, or call Marlow and Associates, 136 Lowell Street, Somerville, MA 02143 (617) 666-3591.

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CIRCLE NO. 23 ON READER SERVICE CARD

EPSON CARE

By Martin Allen Lash

EPSON AMERICAN MARKETED it's first dot matrix printer aimed for the retail market in the United States in 1979. One of the first needs of the marketplace identified by Epson was that of end users being able to obtain convenient, efficient and quick product service. Epson's service department was created.

The department started with only 12 employees — all based in Torrance, California, and that auspicious beginning has enlarged the Epson America Service Division (EASD) to over 100 employees. The number is ballooned by an additional 60 service-related people at the Epson distributor level throughout the country.

Today the common goal of the service division is to excel in customer service support. "It's a constant challenge to improve the available service to the end user," says service VP Dick Bulot.

PREMIUM SERVICE, AFFORDABLE

In order to help meet Bulot' s challenge, Epson introduced Epson Extra Care (EEC).

It's a "promise", to use EASD director of administration and control Joe Cagle's term, the ability of EASD to provide end users with easily obtained premium service at an affordable price. And that promise stimulated a campaign to review and requalify all current authorized service centers.

In order to qualify as a "new" authorized service center the following requirements must be met:

Maintenance of latest information on EASD service programs;

Repair of any Epson owner's product regardless of place of purchase;

Honoring of any Epson EEC agreement purchased in the U.S.;

Employment of an Epson America-trained technician;

Maintenance of Epson spare parts in inventory.

Today anyone can walk into an authorized Epson care service (ECS) center and not have to wait for parts to be ordered. Epson users can expect to receive timely and conclusive service nationwide as a result.

SELLING SERVICE INSURANCE

The final part of fulfilling the promise was to make an EEC agreement easily obtainable. With an Epson dealer network already in place, EASD had an advantage. Epson distributor personnel began to recruit dealers for the sale of service agreements in early October. The dealer base is expected to reach 2,500 by late February, 1985.

SUPPORT ELEMENT

In early 1982 Epson America established 12 national distributors. Product service support on a regional basis is a primary advantage of this distribution system. Each issue of Epson World will feature a different regional distributor's service department.

Epson America Northeast, Braintree, Massachusetts, started as a very small organization that has continued to grow with recent additions to the training, technical support and service facilities. CEO Tom Cavanaugh defines the need for quality customer service support as being as important an "ingredient in distribution as are sales organizations. The follow-up required of service is much more substantial to ensure dealer and purchaser satisfaction."

Cavanaugh's service department consists of six employees with Dick Brown as department manager supervising two technicians, Ilene Fox and Sandra Reilly; two clerical assistants, Mary Boyle and Diane Parker; and parts person Mike Carp.

Brown says the most important function of the service department is "to support sales by providing good service to our customers. They will add additional Epson equipment to their existing systems" as a positive end result of consistently good service support.

At Epson Northeast service department activities include parts sales and distribution, in-house product repairs, EEC sales, service center coordination and dealer service training.

"Dealers themselves are pleasantly surprised with the depth of our service training," says Brown. "They've told me that Epson courses are superior to other manufacturer's training."

The territory serviced by Epson Northeast covers 150 service centers. "We're hoping to convert 80 of those into new authorized ECS centers by the end of February," says Brown. "We try to refer repair customers to the closest service center, but we will provide service to those customers that prefer sending products directly to Epson."

Brown's 1985 goals are to "improve repair turn-around time" on dealers' products and to continue to improve the service center network in order to decrease end user turn-around time. ●

Martin Lash is manager of business development for Epson America Service Division. Prior to his position with Epson America, he was service manager with Epson Mid-Atlantic in Philadelphia and has over eight years of service management experience. If you operate an authorized ECS center and have a story to tell, please send information to Martin Lash, Manager of Business Development, Epson America Service Division, 23155 Kashiwa Court, Torrance, CA 90505. — *Ed.*

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LET YOUR PX-8 CHAT WITH BIG BLUE

By David A. Fielder

Missing Link
Marlow and Associates
136 Lowell St.
Somerville, MA 02143
617-666-3591

Missing Link (ML) is a program to transfer files from the Epson Geneva (PX-8) lap computer to the IBM-PC or vice versa.

It nicely allows you to use the IBM as a mass storage device for Geneva programs, or to transfer working files created on the Geneva in the field to the PC for processing.

Once the files transfered reside in the PC's storage, you can make full use of peripherals attached to the PC. For example, if you use your Geneva at home with Wordstar, you can create letters or reports that can be edited and then printed later using your IBM and its printer.

ML will benefit anyone who has access to an IBM-PC or compatible computer. The potential user should be aware of several requirements before attempting to use this system. The host computer must be equipped with a serial port. It's standard on the IBM XT model but optional on other PC models. And the IBM must be running MS-DOS 2.0 or greater.

You'll also need the printer cable for your PX-8. This cable isn't included with the Geneva.

ML package contains one five-and-a-quarter-inch floppy diskette for use in the host computer plus a cable adapter to connect your Geneva printer cable into the PC's serial (RS-232C) port.

You also receive a short, well-written operating guide which provides the user with all the information needed to properly operate the program. Read it before attempting to use ML.

ORDERING FROM MENU

Sending a file from the PX-8 to the PC is accomplished by loading the Mlink program into the IBM. Once you type Mlink, a legend prompts you to Press Any Key to Begin. The following menu will appear:

```
The RS-232 status is:
bit rate=4800     data bits=8
stop bits=2     parity=none
Press (S)end (R)eceive or set baud (3)00
1(2)00 (4)800 or e(X)it your pick:
```

If you want to upload files from the Geneva to the IBM, the IBM will be receiving, so press the R. You'll see:

```
Press control B> to exit name entry
mode
control C> to exit program.
please enter file to be received:
```

At this stage, enter the name that you want your file saved as on the IBM disks. Don't press return yet.

Now to prepare the Geneva for its half of the transfer process. The necessary steps are contained in a program residing in a PX-8 ROM file called Filink (all PX-8's have this file as part of the permanent memory). Filink causes the PX-8 to display a menu stating the RS-232C status, then asks you if you want to S(end) or R(eceive).

The PX-8 will respond with Enter File Name. Enter the name that your data file is saved under in the RAM. Note: this does not have to be the same name you gave to the IBM-PC.

VOILA!

Press return on both computers to start the file transfer. The programs Mlink and Filink will indicate when the file has been successfully transferred. And you've done it.

Following the instructions as listed on the menus will take you through this process with no difficulty provided all the necessary connections are properly made before running the programs.

ML is a very special program that any PX-8 user with access to a properly equipped MS-DOS PC should find everyday uses for. The instructions included with the program are easy to follow and easy to understand.

Certainly file transfer could take place using any hipowered communications package on the PC, given that the user has the knowledge and the time to use it. The strength of Missing Link is that it does not require expertise or experimentation with cables, or references to vague appendages in the back of either machine's owners manual.

Missing Link makes file transfer easy,fast and dependable.

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FontStar
Multiple font printing program for use with WordStar and Epson printers. 16 predefined font styles plus user defined character capability. Available for most CP/M and MS-DOS machines . . . . . $44 US

Orders must be prepaid with check or money order payable to:

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RR#5, Canning, Nova Scotia
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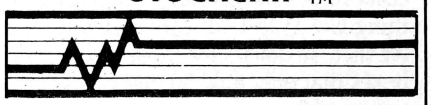
(902) 582-7016

CIRCLE NO. 27 ON READER SERVICE CARD

STOCKCHIP ™



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CIRCLE NO. 30 ON READER SERVICE CARD

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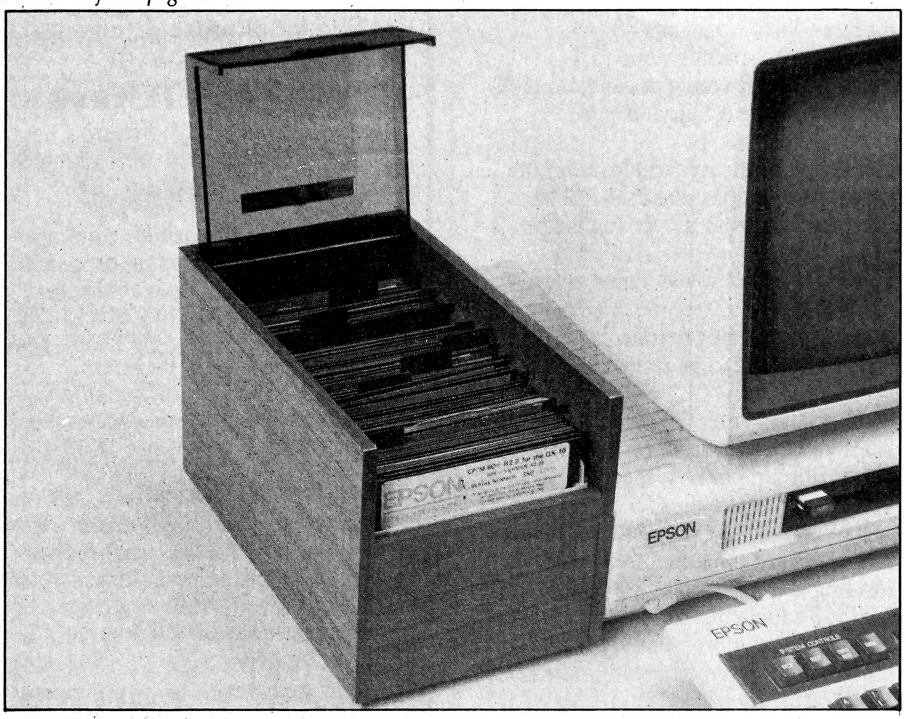


PRETTY cheap box from Kmart.

We threw the forms away because it is more fun looking through a collection of a hundred disks than trying to keep any sort of organized index to them.

Ok, it doesn't sparkle and shine like those nifty plastic boxes that show every flake of dust, but then it only costs 10 dollars (on sale). Runs something like 15 to 17 dollars regularly. Better than 40 dollars for those sleek, foxy boxes that only hold 50 disks, wouldn't you agree?

GOLDEN PRINTER INFO

Epson Printers for Writers
Epson Book Series
Epson America, Inc.
3415 Kashiwa St.
Torrance, CA 90505
213-539-9140
price: $16.95 at Epson dealers

For the past several months Epson has been publishing books of printer applications.

While tips and techniques of using Epson printers with MacIntosh and other Apple computers is probably not a hot subject with most Epson computer users, one of the series, Epson Printers for Writers, by Robert Oaks, is one that you may want to check out. This book is one of the best printer interface books we've seen to date.

The book is divided into ten chapters following a short introduction that describes printing applications as they apply to writers. Chapter one describes the operation of dot matrix printers, Epson style. General information that applies to all dot matrix printers is given, but specifics of every Epson printer from the MX-80 through the LQ-1500 are described.

The detail is so fine that even variations of MX-80 printer firmware (programs inside the printer that make it act like it does) are described. A procedure is given that lets you determine which is in your printer.

Chapter two outlines how to control your printer from word processors in general, and Wordstar in particular. Every page drips with information that you'd take months to collect otherwise. Chapter three describes secretarial writing; all sorts of ways to write "pretty" letters using the various print modes on Epson printers.

Report and play writing is described in chapter four. Techniques for printing tables (with lots of examples), super- and subscripts, footnoting, the whole ball of wax. This chapter even talks about how to print things so they are easier to read. Ever see a computer book talk about typesetting subjects like this before?

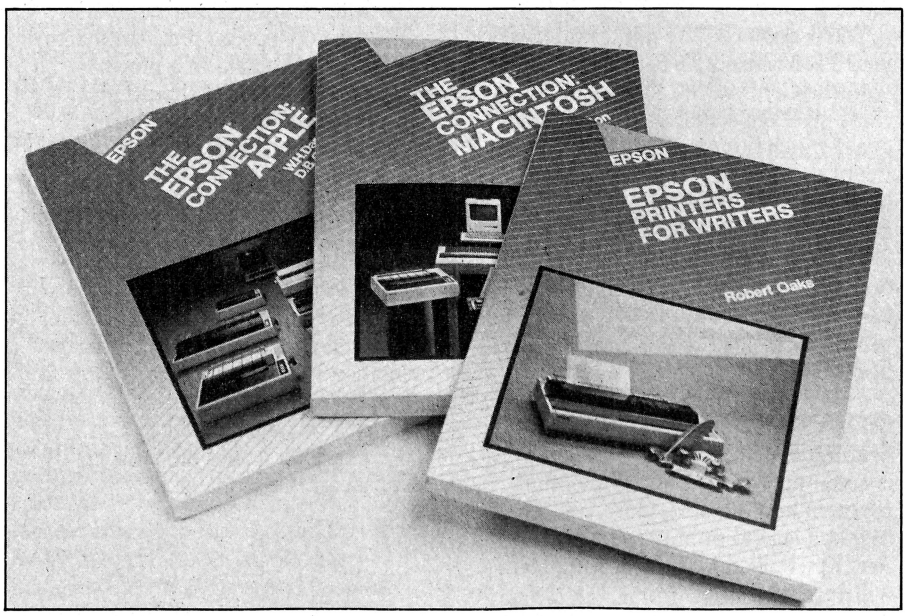
Chapter five is all about manuscript writing; and chapters six, seven and eight show how to drive printers from BASIC. A short course on BASIC is even included, just to make sure you know what the author is talking about.

The book concludes with chapter nine devoted to graphics, technical talk about printer control in chapter ten and all about how to interface Epson printers to various computers in chapter eleven.

It even tells how to make your own printer cable, at about half the cost of factory made units.

This book is well written and illustrated. The language is easy it understand and gently leads you into techno-land and back.

It is exceptionally well organized with a good index. We'd guess that it is probably more comprehensive and complete than any other book about printers you are likely to find. We'd rate it a "best buy". ●



BEST buy bet from Epson book line-up.

continued from page 31
simple programs using such RSI BASIC commands as CONNECT, CIRCLE, RECTANGLE, FILL and various graphic commands.

Picture-drawing programs must make use of the graphic statements in conjunction with numeric coordinates in a line-by-line sequence. The process of composing a picture drawn this way is very difficult because the drawing can't be seen until the program is nearly completed. Numerous mathematical calculations are necessary because the drawings are done using numbers, not visually as if with pencil and paper.

Editing miscalculations (or changing the picture) is very time consuming; it all has to be done by programming. After much time and effort, I had made a few simple pictures, but the procedure was cumbersome. The results were very hard to come by.

Because of this I decided to make a graphics editor or drawing program that would let me concentrate on drawing pictures rather than programming. The object was to make as many of the RSI BASIC graphics commands available as I could. Sdraw is the result.

EASY FREEHAND COMP

Sdraw allows pictures to be created, edited and printed relatively quickly and easily. Although it isn't quite in the same league as Macpaint, it is very usable.

Sdraw requires only a QX-10, RSI BASIC and an Epson printer capable of graphics output, such as a FX-80 or RX-80. No mouse or other hardware is required.

Easy composition can be done on the QX-10 graphics screen. The numeric cluster is used to move the cursor. Drawing modes allow freehand lines and dots to be drawn and erased by moving the cursor with these keys.

Other commands in Sdraw display circles, rectangles, text and straight lines drawn point-to-point. Enclosed areas can be filled: objects or screen areas can be moved or saved for later use. And of course, the screen can be printed or saved to disk. These and the other commands, listed in the tables, give Sdraw considerable flexibility.

Quick help with all commands is available under the help key. This online facility gives a view of all the single-key commands and the fonts usable by the TYPE command.

Sdraw is entirely menu driven and features pop-up windows. Each window describes a command and prompts for the appropriate variables. For example, the window for the MOVE command looks like this.

DESCRIPTION: Copies an object on the screen to a new location.
INSTRUCTIONS: Press 1 to pick up an object. Press 2 to copy it to a new location. Press UNDO to return to the main menu.

RUNNING AND USING

Before you can run Sdraw it must be entered in RSI BASIC. This is a time consuming and painful project, but if you enter it exactly as printed in the program listings shown, then stored in the right (B) disk drive, it will run correctly. The program is run from RSI BASIC by simply placing the disk containing it in the right disk drive and typing RUN B:SDRAW.

For convenience, all screen images are stored on the right disk drive along with Sdraw. No error trapping has been provided if Sdraw is not on the right disk drive.

All Sdraw commands use a similar format. Only the first two letters of a command need be typed. When a command is entered a description of the command is shown on the screen along with a prompt for input.

These descriptions and prompts appear in pop-up windows for single letter commands and at the bottom of the screen for those selected from the main menu.

continued on page 50

LISTING ONE, SDRAW

Sdraw program written in RSI BASIC, must be carefully entered or you can expect problems when run. Window outlines starting at program line 4120 print as a series of letters — f, g, h, i, v and w. These characters should be replaced with the following graph-shifted characters:

Letter in listing / Graph-shifted Character

g	m
f	6
h	j
i	u
v	0
w	/

(Graph-shifted characters are typed by holding down graph-shift key while desired character is typed.)

```
10 REM SDRAW Copyright 1984 by Scott Cardozo
20 REM This program may be copied freely for
30 REM personal, noncommercial use and may
40 REM not be sold.
50 REM
60 ON ERROR GOTO 5070
70 IF LOOKUP("B:DRAWING.DRW")=0 THEN 200
80 CURSOR 0
90 DISPLAY 2
100 CLS
110 PRINT@ 12,33;" LOADING SDRAW"
120 PRINT@ 13,33;"  please wait"
130 SCREEN 1
140 CLS
150 OPEN #11,"R","B:DRAWING.DRW",32766
160 SCRN READ #11,(0,0)
170 CLOSE #11
180 DISPLAY 1
190 AAA=BYTE(0)
200 X=320: Y=200
210 READ A: WHILE A>0: A$=A$+CHR$(A): READ A: WEND
220 DATA 6, 1, &E, 40, &26, 0, &C3, 5, 0, -1
230 BDRAW 63,9
240 LET B=1
250 LET MO=1
260 CURSOR 0
270 CLS
280 BELL
290 DISPLAY 2
300 CLS
310 PRINT CHR$(27);CHR$(41);: PRINT@ 2,35;"MENU SCREEN"
320 PRINT CHR$(27);CHR$(40);: PRINT@ 3,35;"-----------"
330 FOR A=1 TO 5: PRINT:NEXT A
340 PRINT CHR$(27);CHR$(41);: PRINT SPC(34);"- COMMANDS -"
350 PRINT CHR$(27);CHR$(40)
360 PRINT "   Circle      Cls    Draw   Fill   Move   Home
    e   "
370 PRINT "   Rectangle   Save   Edit   Quit   Type   Var-ty
    der   "
```

continued from page 35

Otherwise, turn off the hard disk before using any other version of CP/M, Valdocs 1.18/1.19 or TPM2 programs.

Failure to do so will probably cause great sadness in River City the next time MS-DOS is used.

The plastic overlay provided with the QX-PC2 identifies many of the MS-DOS function keys. A set of adhesive labels is provided for keys in the main typing area and numeric cluster whose function changes under MS- DOS.

The majority of these changes are of the nuisance variety and involve shuffling the positions of the various bracket symbols. The end-result is that most of the keys match up with IBM's concept of an ASCII keyboard.

The number of keys on the numeric keypad have been changed to function as they do on the IBM product line. The Epson ENTER = (on the numeric cluster), TAB SET and TAB REL keys have been deactivated under MS-DOS.

The QX-PC2 uses the IBM 5150 format (PC-DOS) for floppy disk storage. Disks written on the QX-10 using the QX-PC2 can be freely interchanged with those from the IBM PC.

ENHANCED IBM COMPATIBILITY

The QX-PC2 co-processor board is a well-made, quality product.

Compared to the earlier QX-PC verson, IBM compatibility has been considerably enhanced, and a better IBM keyboard is emulated better.

We ran a random assortment of MS-DOS programs that we have around and found, much to our pleasure, that they all came up and ran just as they should.

The screen, for the most part, performs and behaves the same as that on the IBM system. (On programs where "ripple" is apparent on the IBM, it ripples on the QX-10. When the IBM screen "snaps", so does the QX-10 screen.

The programs we tried included

QX-PC
MS-DOS Co-Processor Board for Epson QX-10
• Allows popular 16-bit MS-DOS and PC-DOS software to run on the QX-10.
• Simple plug-in installation in option slot.
• Features a powerful 5 MHz 8088 CPU.
• Memory expandable to 512K RAM.
• Includes keyboard function overlay.
Titan
Titan

TITAN QX-PC KIT with co-processor electronics expansion board, MS-DOS users' guide, floppy disks and overlay for HASCI-2 keyboard. Overlay for original QX-10 keyboard is not available. Titan start-up guide not shown.

EPSON QX-10 ACCESSORIES

CR103 Modem Card (fits inside QX)	$169.00
Titan MSDOS Card (user can install)	495.00
RX80 Dot Matrix	259.00
MX100 Wide Carg. Dot Matrix 100cps — was $699	599.00
10 Meg Hard Disk 30x more storage, 7 to 10 times faster than floppies	1895.00
LQ1500 200 cps & near letter quality	1395.00
Parallel or serial card	99.00
New CR420cps Printer	2295.00
CRII letter quality	449.00

Call for pricing on other EPSON printers.

10% discount for cash, prepayment, or money orders on above items only.

Ribbons MX, RX, FX 80 cartg.	$4.95
Ribbons MX, RX, FX 100 cartg.	10.95
Printer switch — 2 printers, 1 computer	79.95
Diskettes Winners lifetime warranty DSDD 10 box — Reg. $39.95	24.95
Dustcovers MX, RX, FX 80	6.95
MX, RX, FX 100	8.95
Promoden 300/1200 Hayes Compatible	399.00
QX-10 Book, Barian	14.95
QX-10 to EPSON (Cent.) printer cable — was $49.95	24.95
Math Professor	49.95
Typing Professor	49.95
Laser Tanks	44.95
Star Destroyer	44.95
Reading Professor	145.00
Falcon Adventure	44.95
Logo Language	145.00
Q Plotter graphics program	175.00

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Accounting Partner GL, AR, AP, and payroll. All 4.	$399.00	$339.00
Peachtree - Peachcalc, Text, Thesaurus, Spell	400.00	199.00
Home Accountant	129.00	89.00
Lotus 123 (Req. MS-DOS)	495.00	395.00
Multiplan Spread Sheet	199.00	185.00
Zork I, II or III	49.95	44.95
Baron Real Estate Game	59.95	54.95
Deadline or Infidel	59.95	54.95
Witness or Enchanter Adv.	59.95	54.95
Sorcerer or PlanetFall	59.95	54.95
Friday! Data Base Ashton Tate	295.00	275.00
Wordstar	495.00	395.00
dBase II	699.00	429.00

Visa, MasterCard, COD's accepted. Add $4 for shipping per order, most orders shipped next day. Prices subject to change without notice. Happy Computing!

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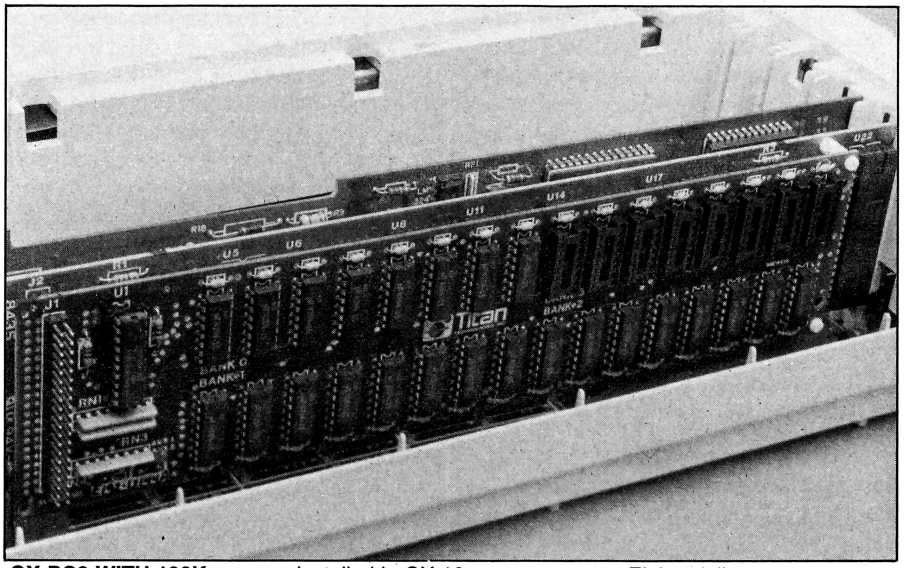
CIRCLE NO. 14 ON READER SERVICE CARD



QX-PC2 WITH 192K memory installed in QX-10 accessory area. Eighty-dollar memory expansion kit fills empty sockets, bringing up capacity to 256K. Another "piggy-back" memroy board mounts atop this board for up to 512K of MS-DOS memory.

Pfs:Write, Pfs:File, Supercalc three and others.

If it wasn't for the keyboard and screen, you'd never know that they were being run on a QX-10.

The installation documentation supplied was adequate and worked the first time, something out of the ordinary in our experience. At times, though, you may wonder where you are going. For example, one step simply says to press the left arrow three times.

Installation is easier if your dealer does it for you.

We did not perform the Comrex hard disk partitioning.

The keyboard compatibility changes are something less than enthralling. It's hard to understand what practical reason exists to rearrange the actual key layout.

This forces the operator to learn — in effect — two keyboards, something of dubious virtue.

There were no qualms about changing keys that make sense (such as the function keys). Likewise, no problem occurs over dropping definitions on keys that don't exist in MS-DOS-land, such as TAB SET and TAB REL keys.

But why the calculator pad ENTER key was deactivated is baffling. It doesn't hurt anything, and is a real benefit to an accountant. And why was it necessary to scramble the main typing layout?

IBM produced a keyboard that NOBODY likes.

EVERYBODY likes the Epson keyboard. Solution?

Give us a version, Titan, that leaves the main typing section alone.

Although Titan has gone to great lengths to emulate the IBM PC, caution should be used when buying software to use with the QX-PC2. Things to watch out for are "fancy" graphics, out of the ordinary displays and software products that depend on special hardware, either inside or outside the computer.

When in doubt, give Titan a call before you plunk down your bucks.

QX-16 VS. QX-10/QX-PC2

If you need MS-DOS capability, which is better: to upgrade your old QX-10 or trade for a new QX-16?

Users with both CP/M and MS-DOS computing requirements have a difficult choice to make with the advent of the QX-16.

The QX-16 and the Titan co-processor support the same 512K of memory, but the QX-16 has a better shot at screen compatibility because it has a special IBM video controller.

Further down the road, the QX-16 will be given color capability, but generally, color is for games and recreational use. Few business applications require color.

Expect both the QX-10/QX-PC2 combination and the QX-16 to run MS-DOS programs about equally fast.

Convenience? Except for the keyboard shuffle on the QX-10, both systems are about equal. It isn't a big deal to have to stick a pre-boot disk into the computer before running MS-DOS. But all the same, it isn't required on the QX-16 system.

Perhaps it all comes down to price.

A fully-loaded Titan board costs over a thousand dollars. Retail on the QX-16 is just shy of twenty-five hundred dollars.

But the basic 192K QX-PC2, which handles the majority of MS-DOS software, costs only 595 dollars. It could be a difficult choice. If the QX-PC2 can run the MS-DOS software you want, it could save you a bundle.

PRICE LIST

QX-PC2 with MS-DOS 2.11, users'guide and pre-boot software:

Memory	Price
192K	$595
256K	$670
384K	$895
512K	$1,045

Auxiliary memory board (needed to upgrade existing QX-PC2 boards with 256K of memory already installed):

Memory	Price
128K	$249
256K	$399

Memory upgrade kit contains 64K of pretested memory for insertion in either the QX-PC or auxiliary memory board, 64K, $80.

Titan offers three software support products for use with the QX-PC2 board: RAM disk support, $39; print spooler, $39; GW BASIC (offered initially only through Epson dealers, price unavailable).

TITAN CONVERSION OFFER

Titan Technologies has offered to upgrade the original QX-PC boards sold during the last year to the QX-PC2 configuration at a very nominal charge.

A mailing to all registered owners describing the details of the offer will have gone out by the time you read this. Four options are included from simple functional replacement through several upgrade variations.

The proposition is essentially this: your old QX-PC board is returned to Titan with payment and the form included in the mailing. It will be modified to the upgrade specifications that you've selected and then returned to you as a QX-PC2. Six weeks, they say.

This conversion replaces the processor section of the old QX-PC board and changes the decoder chips on the memory expansion board. The entire assembly, including any upgrades ordered, is then sent through the normal manufacturing quality control and testing procedures prior to shipment back to you. ●

COMPUTERIZED YAHTZEE **PLAY**-ALIKE

Zingaroo!
A Computerized Dice Game
Oakwood Publishing
P.O. Box 3934
Gardena, CA 90247-7566
800-634-5545
in CA, 213-217-1323
Price: $29.95

By Steve Stecklow

Epson QX-10 owners who like to play computer games are probably familiar by now with the Oakwood Publishing Co., formerly Acorn, the largest third-party software developer for the QX-10.

During the past year, Oakwood has released eight games specifically for this computer, many of which approach video arcade quality in terms of graphics and sound effects.

Zingaroo — the latest release — is not a flashy intergalactic battle fest like some of the California software house's better known products such as Underground City or Convoy Attack. Billed as a "strategy dice game," Zingaroo is a computerized take-off of Yahtzee.

Although the game won't astound you with its graphics (first-time visitors to Underground City typically shout, "I didn't know my QX-10 could do that!"), Zingaroo is among the most challenging and addicting of any of the games I've seen thus far for the QX-10. And at the price, it's a genuine bargain.

A dice-rolling game with the object to score as many points as possible during 14 turns of play, you get five dice with two chances to roll in each turn. The second roll is optional, with the player offered the opportunity to re-roll any of the dice he/she doesn't want.

NOW, FOR THE STRATEGY

The strategy comes in determining how you want your points counted during each turn. At the end of each turn, you must select one of 14 possible categories on which to base your score for that roll.

Six of the categories allow you to score the total of the dice which have the same value. So, for example, four sixes would count as 24 points under the sixes category.

If you throw 1, 2, 2, 5 and 5, you could choose to take four points under twos or 10 points under fives. You can only select a category once. After that you must select one of the remaining ones, until all are used up. As I said, Yahtzee aficianados will find this familiar turf.

Some of the other categories are Pip Count, which allows you to score the total value of your five dice; Full House, which just as in poker consists of three of one kind and two of another; and 4-all, which is the cumulative total of four of a kind.

You qualify for special bonus points when a roll adds up to 13 or if you get a Zingaroo – five of the same kind.

HERE'S WHERE THE FUN IS

OK, OK, you're probably wondering by now why I'm trying to convince you to use a 2,500-dollar machine to play dice with. Why not just buy Yahtzee?

The answer is that in addition to keeping score, the QX-10 offers an almost endless variety of intriguing playing options.

First of all, you can play against the computer, which is known in Zingaroo as Ignatz. As you look on, Ignatz throws his own dice, decides which ones to keep, and which ones to roll again, and then decides how to score his turn. You can program Ignatz at the beginning of the game to act dumb, average or smart. Unfortunately, you, personally, are stuck in whatever mode you came in.

If you'd like some company, up to two other players can join you in a game with Ignatz. The computer can also sit out (leaving up to four to play). Or, if you're just a spectator at heart, Ignatz can even play alone.

To make matters even more interesting, you can determine the wildness of each game. When wild dice appear, the player gets to choose whatever kind of die he or she wants. You can program the game to turn up wild dice as few as once in every 31 throws or as often as once in seven throws.

The wilder the game, the higher the scores and the more tricky the decision-making.

As in the arcades, the computer also records all high scores, including those earned by Ignatz. The scoreboard of course may invoke pride or embarrassment, depending on your skill. Fortunately you can opt whether to see it.

Although the game is written in MBASIC, you won't have any problem with the speed. In fact you can program that too.

BOTH HANDS ON THE TABLE, IGNATZ

I suggest that in the beginning, you insist that Ignatz play slow but smart. This way you can witness the computer's strategy. At fast speed, Ignatz throws so quickly, you'll be likely to miss which die he decides to keep or throw away and how he scores his points.

My only complaint about Zingaroo is — as with so much other software — the documentation. Granted, you can't expect a thick, bound manual with a 30-dollar game. But the pamphlet that came with mine did not even explain what the object of the game is or how one wins. It probably helps if you are familiar with Yahtzee.

A final note about the price. Zingaroo was originally offered during a special fall promotion last year for just $9.95 to owners of other Oakwood products. According to an Oakwood spokesman, so many people took advantage of the offer, the company decided to make Zingaroo available to everyone (through Epson dealers or directly from Oak-

wood) for $29.95. That's quite a price hike, but in my mind the game is still worth it.

As someone who has sampled quite a few video and computer games, I know now quickly most games end up in the closet, I've had Zingaroo for a few months now, and I still play it regularly.

It's not the most complicated game you'll ever see — or the slickest, but it may be the most addicting — maybe, that explains why Yahtzee has proven so popular for so long.

Steve Stecklow, when he's not playing games, is a reporter with the Philadelphia Inquirer and president of the Philadelphia-Area Epson Users Group. — Ed.

LAS VEGAS YOU BETTER LOOK OUT NOW

"21" Mentor
A Black Jack Trainer
Oakwood Publishing
$29.95

(This game was reviewed by an EW staffer who has just relocated to Vegas) Anyone who visits Las Vegas knows what this program is all about.

It seems like most every computer convention or show I want to go to is held in Vegas. Do you know what Las Vegas is like? Hot, flat, sleazy and unutterably boring. Only slightly less boring than the computer shows that I should know better than to go to.

The only way to avoid the heat and boredom in Las Vegas is to stay inside. But even the best hotels have crummy rooms, and you always end up in the casino. Which is right where they want you to be in the first place.

You can get almost anything in a Las Vegas casino — except cheap gambling lessons.

"21" Mentor is a simple program that teaches the art of Black Jack from the ground up. A menu gives a choice of things to do: instructions, a "mentor" mode (which lets you know if you made a good choice and gives suggestions if you didn't) and a play mode.

AWRIGHT, ENUFF TEACHIN', LET'S PLAY

The mentor mode soon gets in your way. Response is good, but let's face it, after you discover you have a natural talent for 21 like mine, no mentor program is going to last for long. Practice is for wimps.

The play mode is where the sheep are separated from the bulls. I started my first turn with some two-dollar bets. (My wife was just around the corner from me, and I didn't want her to think I was being extravagent.)

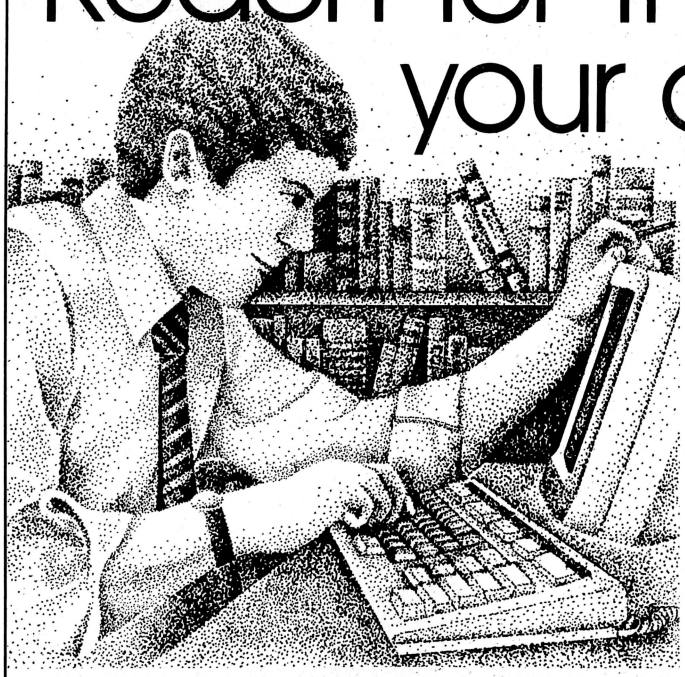
Well, anyway, I was doing pretty good, see, so I ordered a double Wild Turkey on the rocks. My in-house cocktail hostess obliged. . .but not without that look. Now for the real fun, I upped the ante. . .went straight to the C-note bets.

It soon became apparent where the wild turkey on the rocks was — not in my glass. Has your QX-10 every threatened to bring in some boys from Tokyo to "help" you pay up quick?

Actually "21" Mentor plays a good game of Black Jack. It is fast, has good, responsive graphics and doesn't kill you with cuteness. It allows all the standard splits and doubles.

This is one of the nicer versions of "21" around, and as far as I know, the only one that actually displays cards on the QX-10 screen. ●

Reach for the height of your craft...



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CIRCLE NO. 32 ON READER SERVICE CARD

EPSON **INTERACT** '85 **ALL** OVER AMERICA APRIL 27 BE **THERE!**

Epson will be taking its message to the people via a unique, first-of-a-kind televideo conference this spring called Epson Interact '85 National User Workshop.

The conference will put users and Epson together in the same "room" and shut the door for 12 hours of information and knowledge sharing. It's a bold move in user/manufacturer communications that promises to be a lively, exciting and rewarding day for Epson users everywhere.

The 11-site nationwide all-day link-up will use Hilton hotel conference rooms and satellite relay facilities in each of the host cities. The exact date has not yet been hardened, but Epson officials say they are shooting for April 27. It will be set by the time you receive this magazine.

The interactive video conference will feature guest speakers, Epson product support managers, Rising Star staff, and other independent software developers. Keynote address. Six topical workshops. Two hour-long national hook-up televideo conferences with an additional half-hour following each for live Q and A sessions. And an "electronic hospitality suite" for hands-on use of gear and software.

According to Chuck Champlin, Epson's manager of user group support, the conference is designed to allow "free interaction between Epson personnel, independent software developers and users."

"We're striving to provide meaningful information and to show applications of Epson computer products in real-world situations — from one-person entreprenurial ventures to big business and esoteric scientific use." Video newsclips will demonstrate how people around the country use computers in their daily jobs and lives (such as how Boston radio station WRKO keeps track of fast-paced Celtics basketball stats using a PX-8 (Geneva) and a QX-10.)

Champlin thinks the multi-site national user teleconference is the first such effort by a computer products manufacturer to share information among all users. "By choosing regional centers we believe more people will be able to afford the time and travel expense to attend. It's the best way I know to get corporate managers in touch with people from all over who buy our products and whom we serve," he says.

"When you bring together people from the whole country to talk about something they all have in common, it has to be an exciting moment. I know how enthusiastic we at Epson get when we see a really interesting application or see how someone is solving a difficult problem with Epson equipment. How dynamic will it be when thousands of our users share their experiences, problems and successes?"

The registration fee will be 135 dollars (95 dollars for early sign-up). That fee covers everything from a 9 AM (EST) continental breakfast to the end of the final workshop at 7 PM. Breakfast and lunch are included. All conference material plus a one-year subscription to Interact '85, a quarterly newsletter that will keep Epson users abreast of new applications for Epson products.

Guest entertainers will be used to keep it lively. Although it remains unofficial, one name mentioned is Art Buchwald.

The host cities will be Tampa, Atlanta, Dallas, Los Angeles, San Francisco, Chicago, Detroit, Minneapolis, Boston, New York and Washington.

Topics for the workshops clearly show there's plenty of meaty stuff to appeal to everybody:

- The computer user as an entrepreneur — interesting ways folks make money with their computers.
- The computer and your profit and loss statement — business applications.
- The world at your modem — introduction to telecommunications.
- Portable computing.
- Having fun with your computer — programming, games and recreational activity.
- Graphics and design for fun and print — sophisticated graphics programs will be demonstrated.

Scheduling is arranged so that users can attend four of six workshops.

The live video segments will feature Epson's desktop product manager Peter Bergman, portable computer chief George Rasher, Epson printer pro Dennis Cox, technical support and development top-dog Larry Holsopple. They will be followed by the filmclips of Epson users around the country.

VALDOCS 2 ON HAND

Both the long-awaited Valdocs 2 system and the QX-16 computer should be present and accounted for, stimulating lively interest and discussion. Rising Star spokespeople will be participating fully.

Other presentations and cross-country question and answer periods will put users in touch with machine and software development decision-makers.

The hospitality suite will be open during the entire conference, enabling users to talk directly with Epson technical support staff and representatives from various software publishers. Two computer systems at each site will be networked bulletin-board fashion so that visitors can leave messages and questions for each other on a nationwide basis. Of course, the room will be chock-full of products for everyone to try out.

Epson Interact '85 schedules, registration forms and information materials will go in the mail soon to over 30-thousand Epson owners.

Epson has set up a toll-free line for Interact '85 information. It's 1-800-421-5426 (in California, 213- 539-9140). ●

GRAPH 10

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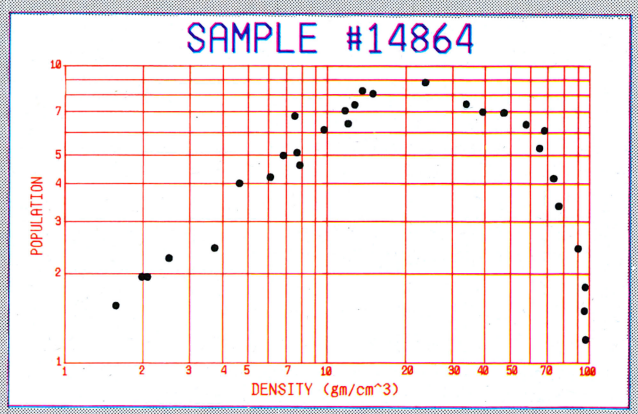

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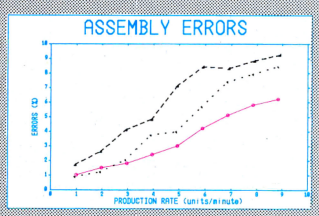
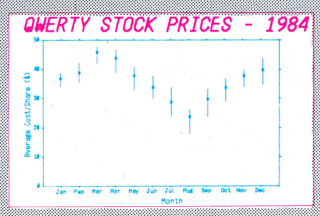
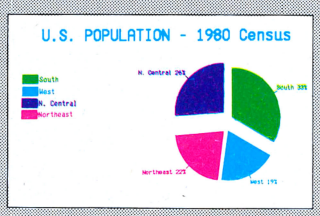


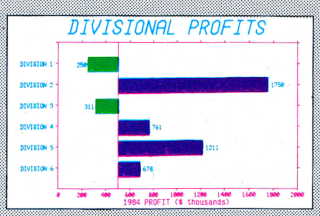
Line Chart



High/Low/Close



Pie Chart



Horizontal Bar Chart

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CIRCLE NO. 25 ON READER SERVICE CARD

continued from page 43

The command windows (or main menu) are removed at the completion of the command, leaving the drawing screen as it appears after the function has been executed. This example shows how to use a command from the main menu: type VA (for var-type). You will see:

DESCRIPTION: types normal characters of varying size and angle on screen.

INSTRUCTIONS: the angle of the characters is represented by a number.

0=0 1=90 2=180 3=270

INPUT: height, direction, width.

Enter the height of the text in pixels, the direction it is to be displayed and the width of the lines in pixels like this: 40,1,2. Next you will see:

INPUT: Characters.

Enter the text to be displayed like this: HELLO!!! which is then displayed on the drawing screen from left to right, 40 pixels high with a two-pixel line thickness. It will be positioned so the lower left hand corner of the H is at the cursor.

Printing a picture in Sdraw is simple. Press the control key in combination with the print key to print the screen on the printer. The status line and border can be removed from the drawing screen with the B(order) command before printing the screen if desired. The printing process can be stopped with the stop key. A pop-up screen will appear with various choices upon stopping the printer.

Drawings are stored and retrieved with the Valdocs keys of the same name. The drawing is stored in a file called SAVEDRW.DRW on the disk in the right drive. Caution, this autostoring and retrieving feature allows only one drawing to be saved on each disk unless it is manually renamed. You may want to modify Sdraw to allow naming the file to be saved or retrieved.

The point-to-point line function is very useful and deserves special comment. Begin by locating the cursor at one of the line end points while in the ERASE mode. Activate the point-to-point line function by typing a slash (/). Pressing this the first time will set a point on the screen.

Next move the cursor to the other end-point of the line and type another slash. A straight line will be drawn between the two points.

FILLING SIMPLE, DANGEROUS

The fill function, although simple, can be dangerous. If an area is not completely bounded the fill pattern will

```
380 PRINT "   Connect     Lines  Help   "
390 PRINT CHR$(27);CHR$(41);: PRINT@ 15,0;"Command";
400 PRINT CHR$(27);CHR$(40);
410 INPUT COM$
420 LET C$=UCT$(LEFT$(COM$,2))
430 PRINT
440 IF C$="CI" THEN GOTO 640
450 IF C$="CL" THEN GOTO 710
460 IF C$="DR" THEN GOTO 800
470 IF C$="FI" THEN GOTO 1330
480 IF C$="MO" THEN GOTO 1410
490 IF C$="HO" THEN GOTO 1620
500 IF C$="LO" THEN GOTO 1700
510 IF C$="ER" THEN GOTO 1780
520 IF C$="RE" THEN GOTO 2270
530 IF C$="SA" THEN GOTO 2340
540 IF C$="ED" THEN GOTO 2450
550 IF C$="QU" THEN GOTO 2570
560 IF C$="TY" THEN GOTO 2680
570 IF C$="VA" THEN GOTO 2800
580 IF C$="PR" THEN GOTO 2960
590 IF C$="BO" THEN GOTO 3010
600 IF C$="LI" THEN GOTO 3210
610 IF C$="CO" THEN GOTO 3270
620 IF C$="HE" THEN GOTO 3450
630 GOTO 290
640 PRINT "DESCRIPTION: Draws a variable sized circle at cursor."
650 PRINT "INPUT: radius, starting angle, ending angle
660 INPUT R,S,E
670 IF R+S+E<1 THEN GOTO 290
680 DISPLAY 1
690 CIRCLE (X,Y),,R,4,S,E
700 IF DM=1 THEN 880 ELSE 1860
710 PRINT "DESCRIPTION: Clears drawing screen."
720 PRINT "INSTRUCTIONS: Press UNDO to return to the Menu or any other key to c
    lear the"
730 PRINT "                screen."
740 AAA=BYTE(0)
750 IF AAA=131 THEN 290 ELSE 760
760 DISPLAY 1
770 CLS
780 LET B=1
790 IF DM=1 THEN 880 ELSE 1860
800 PRINT "DESCRIPTION: Draws a line by moving cursor."
810 PRINT "INSTRUCTIONS: Hold down CTRL for repeat.  Use numeric key pad for"
820 PRINT "              cursor control.     7 8 9"
830 PRINT "                                  4 * 6"
840 PRINT "                                  1 2 3"
850 PRINT "              Press UNDO to return to the Menu or any other key to d
    raw."
860 AAA=BYTE(0)
870 IF AAA=131 THEN 290 ELSE 880
880 DISPLAY 1
890 FONT 12
900 IF B=2 THEN PRINT@ 24,22;"DRAW     ": PRINT@ 24,52;"THICKNESS:";TH+1
910 IF B=2 AND DOT>0 THEN PRINT@ 24,42;"DOTTED    "
920 IF B=2 AND DOT=0 THEN PRINT@ 24,42;"SOLID     "
930 DM=1
940 LOCATE X,Y
950 GOSUB 5010
960 I$=INKEY$
970 IF I$="" THEN 960
980 I$=UCT$(I$)
990 GOSUB 5010
1000 IF VAL(I$)>0 THEN 1180
1010 IF ASC(I$)=132 THEN GOTO 2390
1020 IF ASC(I$)=136 THEN GOTO 290
1030 IF ASC(I$)=133 THEN GOTO 2500
1040 IF ASC(I$)=129 THEN GOTO 3450
1050 IF I$="+" THEN LET TH=TH+1: IF B=2 THEN PRINT@ 24,52;"THICKNESS:";TH+1
1060 IF I$="-" THEN LET TH=TH-1: IF B=2 THEN PRINT@ 24,52;"THICKNESS:";TH+1
1070 IF I$="." THEN LET DOT=1: IF B=2 THEN FONT 12: PRINT@ 24,42;"DOTTED    "
1080 IF ASC(I$)=149 THEN LET DOT=0: IF B=2 THEN FONT 12: PRINT@ 24,42;"SOLID
     "
1090 IF I$="E" THEN DM=0: IF B=2 THEN PRINT@ 24,22;"ERASE    "
1100 IF I$="E" THEN GOTO 1860
1110 IF I$="V" THEN GOTO 4550
1120 IF I$="T" THEN GOTO 4800
1130 IF I$="R" THEN GOTO 4270
1140 IF I$="C" THEN GOTO 4410
1150 IF I$="F" THEN GOTO 4120
1160 IF I$="H" THEN GOTO 1670
1170 IF I$="B" THEN GOTO 3080
1180 IF I$="8" THEN Y=Y-1
1190 IF I$="4" THEN X=X-1
1200 IF I$="6" THEN X=X+1
1210 IF I$="2" THEN Y=Y+1
1220 IF I$="9" THEN Y=Y-1: X=X+1
1230 IF I$="3" THEN X=X+1: Y=Y+1
1240 IF I$="1" THEN X=X-1: Y=Y+1
1250 IF I$="7" THEN Y=Y-1: X=X-1
1260 IF DOT=1 THEN GOTO 1310
1270 IF TH>0 THEN RECTANGLE (X,Y),,TH,TH: GOTO 1290
1280 PSET (X,Y)
1290 IF B=2 THEN FONT 12: PRINT@ 24,3;X;"*";Y;"     "
1300 IF DOT=2 THEN LET DOT=1:GOTO 950
1310 IF DOT=1 THEN LET DOT=2
1320 GOTO 950
1330 PRINT "DESCRIPTION: Fills in area at current cursor location."
1340 PRINT "INPUT: pattern [0-7  0=last used pattern"
1350 PRINT "       1-7=gradient]"
1360 INPUT P
1370 IF P>7 THEN 290
1380 DISPLAY 1
1390 FILL (X,Y),,B,P
```

```
1400 IF DM=1 THEN 880 ELSE 1860
1410 PRINT "DESCRIPTION: Copies an object on the screen to a new location."
1420 PRINT "INSTRUCTIONS: Press a 1 to pickup an object.  Press a 2 to copy it
     onto a"
1430 PRINT "               new location.  Press UNDO to return to the Menu."
1440 AAA=BYTE(0)
1450 IF AAA=50 THEN GOTO 1550
1460 IF AAA=49 THEN GOTO 1480
1470 IF AAA=131 THEN 290 ELSE 1440
1480 PRINT "INPUT: area [1-3], x-dim, y-dim, erase original [1=yes]"
1490 INPUT A,D,I,E
1500 IF A+D+I=0 THEN 290
1510 DISPLAY 1
1520 GET@ (X,Y),,A,D,I
1530 IF E=1 THEN DMODE 1:GOTO 1580
1540 IF DM=1 THEN 880 ELSE 1860
1550 PRINT "INPUT: area [1-3]"
1560 INPUT A
1570 IF A=0 THEN 290
1580 DISPLAY 1
1590 PUT@ (X,Y),,A
1600 DMODE 0
1610 IF DM=1 THEN 880 ELSE 1860
1620 PRINT "DESCRIPTION: Moves cursor to position (0,0) on screen."           t
1630 PRINT "INSTRUCTIONS: Press UNDO to return to the Menu or any key to move
     he"
1640 PRINT "               cursor to the home position."
1650 AAA=BYTE(0)
1660 IF AAA=131 THEN 290 ELSE 1670
1670 DISPLAY 1
1680 HOME: X=1: Y=1
1690 IF DM=1 THEN 880 ELSE 1860
1700 PRINT "DESCRIPTION: Moves cursor to any position."
1710 PRINT "INPUT: x-coordinate, y-coordinate"
1720 INPUT L,C
1730 IF L+C=0 THEN 290
1740 LET X=L:Y=C
1750 DISPLAY 1
1760 LOCATE X,Y
1770 IF DM=1 THEN 880 ELSE 1860
1780 PRINT "DESCIPTION: Erases points on screen by moving cursor."
1790 PRINT "INSTRUCTIONS: Hold down CTRL for repeat.  Use numeric key pad for"
1800 PRINT "               cursor control.       7 8 9"
1810 PRINT "                                     4 * 6"
1820 PRINT "                                     1 2 3"
1830 PRINT "               Press UNDO to return to the Menu or any other key to
     erase."
1840 AAA=BYTE(0)
1850 IF AAA=131 THEN 290 ELSE 1860
1860 DISPLAY 1
1870 FONT 12
1880 IF B=2 THEN PRINT@ 24,22;"ERASE    ": PRINT@ 24,52;"THICKNESS:";TH+1
1890 IF B=2 THEN PRINT@ 24,42;"MOVE:";MO
1900 DM=0
1910 LOCATE X,Y
1920 GOSUB 5010 'Turn on cursor
1930 I$=INKEY$
1940 IF I$="" THEN 1930
1950 I$=UCT$(I$)
1960 GOSUB 5010
1970 IF VAL(I$)>0 THEN 2140
1980 IF ASC(I$)=133 THEN GOTO 2500
1990 IF ASC(I$)=136 THEN PRESET (X,Y): GOTO 290
2000 IF ASC(I$)=129 THEN PRESET (X,Y): GOTO 3450
2010 IF I$="D" THEN DM=1: GOTO 880
2020 IF I$="+" THEN LET TH=TH+1: IF B=2 THEN PRINT@ 24,52;"THICKNESS:";TH+1
2030 IF I$="*" THEN LET MO=MO+5: IF B=2 THEN PRINT@ 24,42;"MOVE:";MO
2040 IF I$="/" OR I$="?" THEN GOTO 3340
2050 IF I$="<" THEN LET MO=MO-5: IF B=2 THEN PRINT@ 24,42;"MOVE:";MO
2060 IF I$="-" THEN LET TH=TH-1: IF B=2 THEN PRINT@ 24,52;"THICKNESS:";TH+1
2070 IF I$="C" THEN GOTO 4410
2080 IF I$="T" THEN GOTO 4800
2090 IF I$="V" THEN GOTO 4550
2100 IF I$="F" THEN GOTO 4120
2110 IF I$="H" THEN GOTO 1670
2120 IF I$="R" THEN GOTO 4270
2130 IF I$="B" THEN GOTO 3080
2140 IF I$="8" THEN Y=Y-MO
2150 IF I$="4" THEN X=X-MO
2160 IF I$="6" THEN X=X+MO
2170 IF I$="2" THEN Y=Y+MO
2180 IF I$="9" THEN Y=Y-MO: X=X+MO
2190 IF I$="3" THEN X=X+MO: Y=Y+MO
2200 IF I$="1" THEN X=X-MO: Y=Y+MO
2210 IF I$="7" THEN Y=Y-MO: X=X-MO
2220 IF ASC(I$)=132 THEN GOTO 2390
2230 IF TH>0 THEN RECTANGLE (X,Y),,TH,TH: DMODE 1: RECTANGLE (X,Y),,TH,TH: GOTO
      2250
2240 PRESET (X,Y)
2250 IF B=2 THEN PRINT@ 24,3;X;"*";Y;"     "
2260 GOTO 1910
2270 PRINT "DESCIPTION: Draws a rectangle at current cursor location."
2280 PRINT "INPUT: x-dim, y-dim, pattern [0-7  0 and 8=backround color  1-7 gra
     dient]"
2290 INPUT D,I,P
2300 IF D+I+P=0 THEN 290
2310 DISPLAY 1
2320 RECTANGLE D,I,P
2330 IF DM=1 THEN 880 ELSE 1860
2340 PRINT "DESCRIPTION: Saves drawing onto disk."
2350 PRINT "INSTRUCTIONS: Press UNDO to return to the Menu or any other key to
     save"
2360 PRINT "               the drawing."
2370 AAA=BYTE(0)
2380 IF AAA=131 THEN 290 ELSE 2390
```

"leak out" and attempt to cover the entire screen. It's a good idea to store your drawing before filling an area.

Then if the worst happens, you will have a back-up copy. Fill patterns are permanent and cannot be cleared or replaced by another fill pattern.

The var-type and type commands enter text on the screen. But the positioning methods used by them are different. For var-type: the cursor should be placed where the lower left corner of the first letter of text is to appear. For type, the cursor should be placed where the upper left corner of the first letter of text is displayed.

All drawing takes place on the screen. It is 640 pixels wide by 400 pixels high. One inch on a printout is about 80 pixels in length. Cursor movement is controlled by the numeric keypad as shown in figure one. Any action of the cursor, such as drawing or erasing, takes place at the center of the cursor.

The erase mode is used to move the cursor about. This can present problems if the cursor is moved through an object or filled area and happens to land on an illuminated dot. Should this occur, select the draw mode to relight the lost dot, and avoid landing on the same pixel again.

The cursor can be moved in larger steps while in the erase mode. The multiplication key (*) increases the step size, and the division key reduces it. Each time the multiplication or division key is pressed the step size is increased or decreased by five pixels. This function is useful when quick movement about the screen is desired. It can't be used to erase an object because the cursor will only erase the pixel located at the end of each step.

When the border is turned on, a status line is also displayed at the bottom of the screen which gives the coordinate location of the cursor, the program mode in use, how many points have been set for the point-to-point line function, what line type is in use, the step size for cursor movement in the erase mode, and the thickness of your eraser and pencil.

The quick keys select commands, without resorting to the main menu, that either execute immediately or prompt for input with a pop-up window.

SDRAW USEFUL ALTERNATIVE

If you're frustrated with being unable to produce graphic images on the QX-10 screen and do not want to spend a lot of money on a drawing program such as Qxdraw, Valdraw or Valpaint, the Sdraw may be for you.

I have used it for illustrating many school reports, drafting class projects, the banner on my user group newsletter, invitation cards and more. I have found it useful, and I hope you do, as well.

I'll be happy to answer any questions about Sdraw you may have, but please included a self-addressed stamped envelope. If you'd like Sdraw on a disk to avoid the tedious task of typing it from the listing, I will supply it, ready to go, along with the drawings shown in this article and more for 15 dollars. Send to: Scott Cardozo, RFD 1, Box 6, Contoocook, NH 03229. ●

TABLE ONE, RSI BASIC GRAPHIC COMMANDS

BDRAW	POINT
CIRCLE	PSET
CONNECT	PRESET
DMODE	RECTANGLE
DRAW	TURN
DRAWTO	TURNTO
FILL	VPRINT
LOCATE	XPOINT
MOVE	YPOINT
MOVETO	

TABLE TWO, SDRAW FEATURES

STOP, HELP, UNDO, STORE, RETRIEVE, PRINT, MENU and DRAW are Valdocs compatible.
CURSOR movement by use of numeric keypad.
DRAWS straight lines between point on screen.
CONTINUOUS line drawing with cursor.
ARCS and circles may be drawn any size or location.
CHOICE of solid or dotted lines.
VARIABLE line thickness.
SEVEN different area fill patterns.
TEXT may be any size, position, thickness, and four different angles.
STORES and retrieves the screen display on disk.
PRINTS screen display on Epson RX and FX printers.
ALLOWS relocation of objects on the screen display.
UP to three figures can be stored temporarily in memory for later use.
ALL functions are menu driven.
QUICK keys with pop-up windows are provided for more experienced users.

TABLE THREE, MAIN MENU COMMANDS

CIRCLE draws a circle or arc of any size at the current cursor location. Circle

continued on page 61

```
2390 DISPLAY 1
2400 IF B=2 THEN FONT 12: PRINT@ 24,22;"STORING "
2410 RESET "B": OPEN #12,"R","B:SAVEDRW.DRW",32766
2420 SCRN WRITE #12,(0,0),,639,399
2430 CLOSE #12
2440 IF DM=1 THEN 880 ELSE 1860
2450 PRINT "DESCRIPTION: Edits a drawing saved on a disk."
2460 PRINT "INSTRUCTIONS: Press UNDO to return to the Menu or any other key to
     edit"
2470 PRINT "              the drawing."
2480 AAA=BYTE(0)
2490 IF AAA=131 THEN 290 ELSE 2500
2500 DISPLAY 1
2510 IF B=2 THEN FONT 12: PRINT@ 24,22;"RETRIEVING "
2520 RESET "B": IF LOOKUP("B:SAVEDRW.DRW")=0 THEN 2560
2530 RESET "B": OPEN #12,"R","B:SAVEDRW.DRW",32766
2540 SCRN READ #12,(0,0)
2550 CLOSE #12
2560 IF DM=1 THEN 880 ELSE 1860
2570 PRINT "DESCRIPTION: Quits RSIDRAW and enters RSIBASIC."
2580 PRINT "INSRUCTIONS: Press UNDO to return to the Menu or any other key to q
     uit."
2590 AAA=BYTE(0)
2600 IF AAA=131 THEN 290 ELSE 2610
2610 CLS
2620 DISPLAY 1
2630 BDRAW 63,8
2640 CLS
2650 FONT 0
2660 BELL
2670 END
2680 PRINT "DESCRIPTION: Types normal characters of varying fonts on screen."
2690 PRINT "INPUT: font [0-15], double width [1=yes]"
2700 INPUT F,D
2710 PRINT "INPUT: text"
2720 INPUT T$
2730 DISPLAY 1
2740 IF D=1 THEN BDRAW 63,32
2750 FONT F
2760 LOCATE X,Y
2770 PRINT T$
2780 BDRAW 63,33
2790 IF DM=1 THEN 880 ELSE 1860
2800 PRINT "DESCRIPTION: Types normal characters of varying size and angle on s
     creen."
2810 PRINT "INSTRUCTIONS: The angle of the characters is represented by a numbe
     r."
2820 PRINT "               0= 0=   1= 90=   2= 180=   3= 270="
2830 PRINT "INPUT: height, direction, width"
2840 INPUT H,D,W
2850 PRINT "INPUT: Characters"
2860 INPUT C$
2870 IF H+D=0 THEN 290
2880 DISPLAY 1
2890 FOR WWW=0 TO W
2900 FOR WW=0 TO W
2910 LET W=W-1
2920 VPRINT (X-WWW,Y-WW),,H,D,C$
2930 NEXT WW
2940 NEXT WWW
2950 IF DM=1 THEN 880 ELSE 1860
2960 PRINT "DESCRIPTION: Reserved for future use."
2970 PRINT "INSTRUCTIONS: Use CTRL-PRINT to print the drawing screen on printer
     ."
2980 PRINT "               Press UNDO to return to the Menu.
2990 AAA=BYTE(0)
3000 IF AAA=131 THEN 290 ELSE 2990
3010 PRINT "DESCRIPTION: Turns the drawing screen boarder on or off."
3020 PRINT "INSTRUCTIONS: Press a 1 for on.  Press a 2 for off.  Press UNDO to
     return"
3030 PRINT "               to the Menu."
3040 AAA=BYTE(0)
3050 IF AAA=49 THEN 3160
3060 IF AAA=50 THEN 3100
3070 IF AAA=131 THEN 290 ELSE 3040
3080 IF B=1 THEN 3160
3090 IF B=2 THEN 3100
3100 DISPLAY 1
3110 PRINT@ 24,3;"
                "
3120 DMODE 1
3130 RECTANGLE (0,0),"R",639,383
3140 LET B=1
3150 IF DM=1 THEN 880 ELSE 1860
3160 DISPLAY 1
3170 DMODE 1
3180 RECTANGLE (0,0),"R",639,383
3190 LET B=2
3200 IF DM=1 THEN 880 ELSE 1860
3210 PRINT "DESCRIPTION: Draws lines of various thicknesses and dotted lines."
3220 PRINT "INPUT: thickness, dotted [1=yes]"
3230 INPUT TH,DOT
3240 LET TH=TH-1
3250 DISPLAY 1
3260 GOTO 940
3270 PRINT "DESCRIPTION: Draws lines between two sets of points."
3280 PRINT "INPUT: position X1, Y1, X2, Y2"
3290 INPUT XA,YA,XB,YB
3300 IF XA+YA+XB+YB=0 THEN GOTO 290
3310 DISPLAY 1
3320 CONNECT (XA,YA) - (XB,YB)
3330 GOTO 1860
3340 IF NU=0 THEN MNU=1
3350 IF NU=1 THEN MNU=0
3360 IF B=2 THEN PRINT@ 24,38;MNU
```

ADDING P'TREE'S SPELL-CHECKER TO VALDOCS

By EW Technical Staff

Some time ago Epson published a technique that allowed Valdocs documents to be checked for spelling with the Peachtree Spelling Proofreader. The process was cumbersome because disks had to be continually swapped in and out of the QX-10.

Fred Halkett of the Computer Forum in Severna Park, Maryland told us how he added Peachtree's spelling checker to the Valdocs system disk to avoid all disk swapping. We have simplified somewhat the process he described, but the idea is still his.

If you do a lot of writing with Valdocs 1.18/1.19, you may want to try it out.

FINDING ROOM

The spelling checker can't be put directly onto your system disk. Its dictionary consumes a lot of space, and there isn't room for it plus all of the Valdocs system modules.

The solution is to remove as many Valdocs modules from the system disk as is possible while leaving the Valdocs editor intact. This will open enough space for Peachtree's spelling checker.

Once this surgery is complete and the changes tested, you will have an editing/spell-checking system disk to use for writing. You'll still need your original Valdocs systems disk whenever other Valdocs functions are used.

The procedure is safe. It will give lasting rewards every time you need to check the spelling in your version of the Great American Novel, and you'll have explored a little more of your computer system.

Half an hour or less is all it takes. Promise.

TO THE BOATS

This step-by-step procedure has been tested. So, if you're careful, things should work okay when you're done.

Using Valdoc' s COPY DISK function, make a copy of your 1.18 or 1.19 system disk (the one you put in your left disk drive). Since you'll be working with only the copy, your original will still be around to bail you out if you get swamped.

You will also need a copy of CP/M (any release will do) and the Peachtext 5000 disk number one (with the spelling checker on it).

Erase files not needed by the editor from your Valdocs system disk: A. Place your CP/M disk in the left drive and the Valdocs system copy in the right.

B. Press the reset button of your QX-10. After CP/M is running, the A> prompt will show on the screen.

C. Check the directory of your Valdocs system disk by typing dir b: Be sure to hit RETURN after that command. CP/M will respond by listing all the files from the Valdocs system disk on the screen. It should look something like that shown in figure one.

D. After confirming that your copy of the Valdocs system disk has the files listed in figure one, type the following commands, each followed with a RETURN:

Command	Purpose
b:	Moves default drive to the right disk drive so you don't have to type "b." for each of the following commands.
era cpyd.chn	Erase the COPY DISK module.
era draw.chn	Erase the DRAW module.
era edit.hlp	Erase the EDIT help file; editor will no longer be available.
era mail.chn	Erase the MAIL module.
era schd.chn	Erase the SCHEDULER module.
era schd.tim	Erase the rest of SCHEDULER.
era version.sys	Erase the Version program.

Now copy the spelling checker files from your Peachtext 5000 disk onto your Valdocs system disk.

A. Type the command shown here, ending it with a RETURN:

Command	Purpose
a:pip	Move the defalt drive back to the left disk and start a disk copy program called PIP. Your screen wil now show a * instead of the former A> prompt.

B. Replace your CP/M disk with the Peachtree 5000 disk (should be in left disk drive).

C. Type the following commands exactly as listed here. Be sure to end each with a RETURN. If you make a mistake the back-erase can be used to correct erros. If a mistake causes the A> prompt to appear, replace the CP/M disk in the left drive, repeat steps A and B above, then continue where you left off.

Command	Purpose
b:=sp.com	Copy the spelling program.
b:=sp.dic	Copy the dictionary
b:=sp.dic	Copy the rest of the spellchecker.
ren spell.com=sp. com.	Rename the spell check program to SPELL.COM for legibility.

When step C has been completed you have a Valdocs editing disk with the Peachtree spelling checker installed on it. This disk can be used for any Valdocs editing application. There isn't room for the other "normal" Valdocs modules of the Peachtree Thesaurus, but a few CP/M utility programs will fit.

UNFRIENDLY NAMING

The Peachtree spelling checker is called up through the MENU key on the Valdocs keyboard. Before it can be used, though, you will have to determine the system filename of the document you wish to check.

System filenames are not user friendly. Valdocs files are saved on disk using a unique and ugly name based on the date the number of files saved that day. The Valdocs INDEXER ties your index name to the actual system filename. This is all done automatically so you may have never seen an actual system filename before.

Unfortunately, the spelling checker doesn't know anything about index filenames, so you will have to supply the system filename equivalent for the document that you want to spell check.

System filenames are not terribly difficult to obtain, but it is a manual step that you'll have to do yourself. They are broken down as shown in the example below:

System Filename (description)
84201005.VAL

Yr.	Mo.	Day	Number	Dot	Extension
84	2	01	005	.	VAL

INITIAL	.INI	VLOADER	.CHN	VDRIVER	.CHN	FONT	.FNT
SYSINIT	.CHN	LOADUP	.CHN	INDX	.CHN	VALDOCS	.CHN
MAIL	.CHN	PRNT	.CHN	MENU	.CHN	TPM	.CHN
CPYD	.CHN	SCHD	.CHN	DRAW	.CHN	SETUP	.SYS
VERSION	.SYS	RESTART	.SYS	HELP	.TXT	EDIT	.HLP
SCHD	.TIM	INDXDATA	.NDX	INDXDATE	.NDX		

FIGURE ONE. A listing of files commonly found on Valdocs systems disks. If you don't have substantially the same files on yours, use a system disk that does.

All Valdocs text files have the same extenstion — .VAL. The number field is simply the number of files that have been stored by the indexer during the day specified by the year-month-date fields. Two decimal places have been allotted for the year and date, but only one for the month.

Months with two digit values are assigned letters. Hence, January through September are represented in numeric sequence one through nine. October, the tenth month of the year, is letter A; November, B; and December, C.

Before you leave the Valdocs environment to use the spelling checker, use the guidelines just presented to determine the system filename. The required date and sequence number can be found next to the index filenames listed when the INDEX key is pressed. Once done the spelling checker can be called up and run.

Be aware that every time a file is stored, the number portion of the system filename will change. For example, if you create a file with the system filename 84201005.VAL, then spell check it. The system filename stays the same. But when the file is edited to correct the spelling, it will change to 84201006.VAL when it is stored after editing. Storage operations that have taken place since the file was originally stored will simply cause the number to reflect the next sequence number for that day.

EASY TO USE

Once you have the system filename for the document to be checked, the use of the spelling checker is easy. Call up the checker from the MENU key. Press MENU. Once in MENU select Menu of Applications.

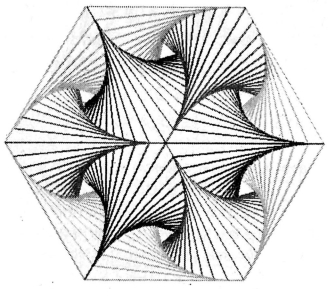
Next tell Valdocs which drive has the application program to be run. Since the spelling checker is on the left drive, select LEFT and press RETURN. A list of application programs will be displayed on the screen. Move the cursor to the program labeled SPELL.COM and press RETURN again to load and start it.

The spelling checker program, once running, can be used the same as described in the Peachtree manuals. When entering the name of the document to be checked, be sure to precede the system filename with b:. This indicates that the file is on the right disk drive (the data disk). Using our example from above, the full filename that you should enter is — b:84201005.VAL.

One last note. The filenames and commands shown above in lower case letters can be typed in upper case if you desire. Both operating system and spelling checker take either form.

Thanks again, Fred, for this idea. And thanks to Rich Rockwell of Epson Mid-Atlantic for his help. If you've got a tip or a trick up your sleeve that you've discovered that you think will make computing life easier for EW's readers, send it along. We'd like to try it ourselves. And if we like it, we'll print it. For the best and most helpful of them, we'll pay 50 dollars. — Ed.

Tap the Graphics Power of Your QX-10 with RSIBASIC!



If you are writing Basic programs for your QX-10 with something other than *RSIBASIC*, boy are you missing out!

The Epson QX-10 is one of the most graphically sophisticated personal computers on the market, utilizing the powerful NEC 7220 graphics controller chip and 128K of dedicated video memory. ***RSIBASIC*** is the first (and *only!*) Basic to put that awesome graphics power at your fingertips!

And there's more! ***RSIBASIC's*** power is not confined to graphics capabilities. It is also one of the most *complete* Basics ever. It is *fast*, extremely *easy to use*, and it's *versatility* is unsurpassed.

Just Look at These Features:

- Supports over 170 keywords
- Supports random access and sequential files
- Supports DATE$ and TIME$ functions
- Turtle graphics commands including:
  - — MOVE
  - — MOVE TO
  - — TURN
  - — TURNTO
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  - — circles
  - — arcs
  - — rectangles
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- Fully supports color machines on color equipped Epson computers
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The Amplot II is a professional 6 pen automatic plotter that has a large 10" x 15" plot range. Q-Plotter by Metro Software is the most sophisticated C.A.D. program available for the QX-10 today. The list price for the package is $1549, but our price is only $900 total.

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DISCOVER THE POWER...DATA-RITER
EFFECTIVE...FAST...EASY TO USE...INEXPENSIVE

It's finally true that for a reasonable price you can have a powerful data base manager and application generator that will allow you to create customized, stand alone programs with no coding or programming knowledge.

Simply follow screen prompts written in plain English and easy to understand User's Manual (no computerese) to generate your own personalized mailing lists, accounting applications, checkbook programs, inventory programs, reports, etc. that really work. **DATA-RITER** does all the coding for you.

DATA-RITER created a standard mailing list program in 5 minutes. Other data base programs used by the same individual (a professional programmer) took from 30 minutes to 5 hours.

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TURN YOUR QX-10 INTO AN EPSON PLUS!

Thousands of computer operators have already experienced the speed and power of the DOSPLUS IV disk operating system. Now, you can, too, while turning your own Epson computer into an EPSON*plus*! Because Micro-Systems Software has made DOSPLUS IV available for our Epson QX-10.

How can DOSPLUS IV give you that extra plus? With its user-friendly operation, unmatched speed and power, BASIC array sort, backup and format from "DO" file and more. Plus, DOSPLUS IV includes M-ZAL, the ultimate disk editor/macro-assembler, allowing you to combine the best disk operating system and the finest editor/assembler all in one program, turning your QX-10 into an Epson*plus*. For one surprisingly low price.

DESCRIPTION	ITEM #	YOUR PRICE
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100 ready to run business programs that are great for small businesses that don't require extensive, sophisticated programs. Also useful for home finances and college business courses.

INCLUDES: 128 page Users Manual...Inventory Control...Payroll...Bookkeeping System...Stock Calculations...Checkbook Maintenance...Accounts Receivable...Accounts Payable...etc.

DESCRIPTION	ITEM #	YOUR PRICE
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CASH REGISTER CONTROL

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FEATURES:
- Completely menu driven.
- Can be used with present cash register or to replace it completely.
- Can keep track of up to 4 independent cash drawers.
- Keeps track of cash, check, credit card and open account sales.
- Can store names, addresses, credit limits and balances for open account customers, and print statements.
- Includes an integrated inventory control system that keeps track of stock levels of all items in and out of stock, and automatically notifies you of low stock levels. Prints inventory reports and pricing labels with product descriptions and codes.
- Prints sales reports that provide an organized picture of your daily sales activity. Reports include transaction audit trail, daily sales by item, and daily sales by salesperson.
- And many more features included.

DESCRIPTION	ITEM #	YOUR PRICE
CASH REGISTER CONTROL	CRC-1E	**$250**

THE MARKET PAC

THE MARKET PAC is a selected set of 37 separate programs designed to help both financial professionals and private investors in the analysis of positions and prospective positions in various securities.

The computer will guide you step-by-step through the operation. A complete user's manual is provided that gives complete full-page descriptions of each calculation and function.

FEATURES: Portfolio Valuation...Trend Analysis...Bond Calculations...Money Market Analysis...Portfolio Bookkeeping...Future Projections...And much more!!!

DESCRIPTION	ITEM #	YOUR PRICE
THE MARKET PAC	MRP-1E	**$99.95**

SMALL BUSINESS MANAGEMENT SYSTEM

An integrated package that allows you to use your computer to manage a small business.

FEATURES: Order Entry, Prints Invoices, Complete General Ledger, Accounts Receivable, Inventory, Hard Disk compatible, and an Installation Package that tailors the programs to your business.

DESCRIPTION	ITEM #	YOUR PRICE
SMALL BUSINESS MANAGEMENT SYSTEM	SBS-1E	**$250**

CHECKBOOK PLUS

CHECKBOOK PLUS is the only complete financial program that's simple enough for a beginner's household budget, yet powerful and flexible enough to help run a small business!

FEATURES: Prints Checks, Automatic Monthly Bill Payments, Tax Preparation Aid, Printouts include - Review of Checkbook, Outstanding Checks, Payee Listing, List of Transactions for Single Category or all Catagories, Payable Checks, Payroll Checks, Search Reports, uses on screen explanations at every step along the way, and more!!!

DESCRIPTION	ITEM #	YOUR PRICE
CHECKBOOK PLUS	CKP-1E	**$99.95**

MAIL PAC II

MAIL PAC II is a powerful new mailing list system with a built-in word processor. And an on-screen "HELP" feature for beginners makes it easy for anyone to get started quickly and easily.

FEATURES: Hard Disk compatible, Can turn "HELP" feature off, Checks for duplicate entries, Form Letter Generator with Built-In Word Processor, Prints Labels, Sorts by Zip or Alphabetical order, Print selected groups of labels by searching for any user-defined code, and more!!!

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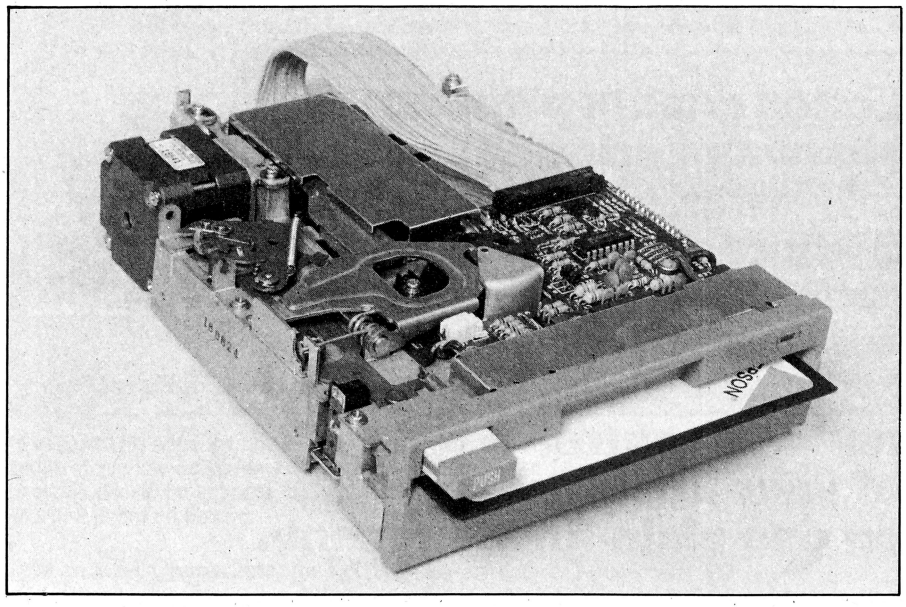
continued from page 17



DISK DRIVES. Half-height, double-sided, double-density, 80-track drives can store, when used with either Valdocs or TPM in the 80-track mode, 720K of data on each disk. MS-DOS uses 40-track mode, providing only 320K of storage per disk. Utility programs to change MS-DOS capacity may emerge as soon as QX-16 reaches market.

shield tray (under the video controllers) and the three screws that secure the controllers to the main printed circuit board. Both controllers and the aluminum support tray are removed as an assembly.

The chip population on the QX-16 main electronics board, despite the extra 8088 processor and support required for MS-DOS compatibility, is not as dense as that on the QX-10. This is due in part to the use of larger memories. The QX-16 provides 512K of memory in two banks of 256K each, while the QX-10 has four banks of 64K. Increased use of flat-pack LSI circuits further cuts down the amount of surface area used by the electronic design.

DRIVING THIS PUPPY

The QX-16 is no different to use than the QX-10. Simply plug in the system disk of your choice (TPM, CP/M or MS-DOS) and hit reset. The loader program built into the QX-16 figures out what kind of disk is being used, selects the appropriate processor, configures the video display and brings up the operating system without user intervention.

Valdocs, MS-DOS and CP/M systems disks can be used directly without any special procedure. Data disks, as always, must be used with the appropriate operating system. For example, MS-DOS requires data disks configured for that operating system — it can't directly read a CP/M or TPM disk. It is likely that utility programs will be developed to allow the QX-16 to swap data disks from one operating system to another, similar to the Uniform program available for the QX-10 and other computer systems.

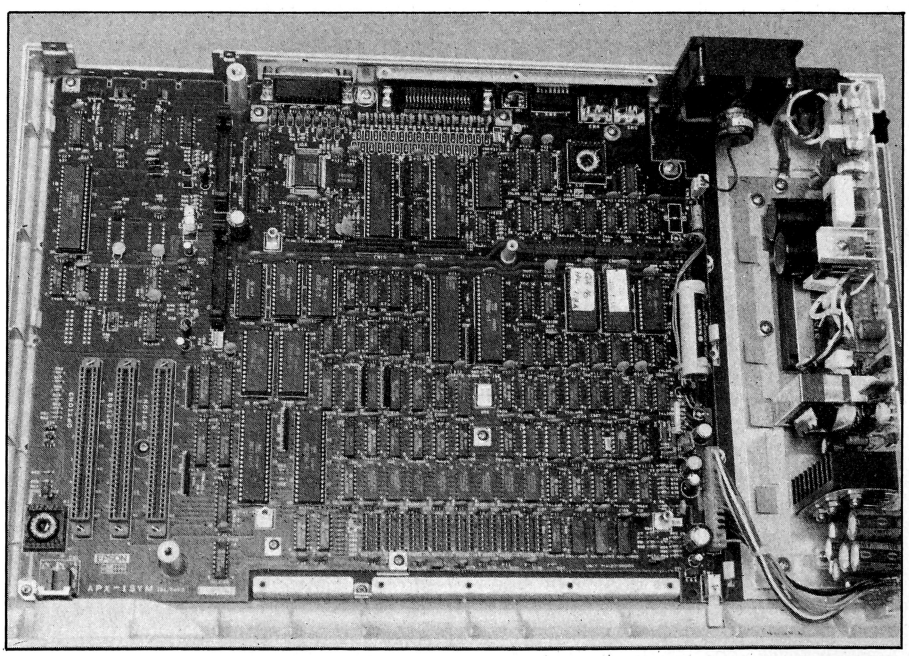
The reassuring purr of the QX-10 disk drives is not a part of the QX-16. The drives make roughly the same kinds (and amounts) of noises found in other computers. You can definately hear the motors running, and there is no doubt when the drives switch tracks. Only present QX-10 owners will complain.

We've been spoiled by the quiet drives in the older machine. The QX-16 drives are considerably quieter than those of the other MS-DOS-compatible system; there is none of the angry "chunk! chunk!" noise heard as tracks are switched.

It takes twice as long to format or copy a Valdocs or TPM disk. These drives have double the number of tracks. This means double the copy time. Copy times of MS-DOS disks (40-track) are considerably less than on an IBM PC. The real benefits of the 80-track mode are that all of Valdocs can fit on a single disk (utilities are still on a second disc) and that increased space is available for really long documents. You won't any more be running out of room when editing documents longer than 50-pages.

ROAD HANDLING

When it comes to performance, particularly with Valdocs, the QX-16 proves itself a winner.

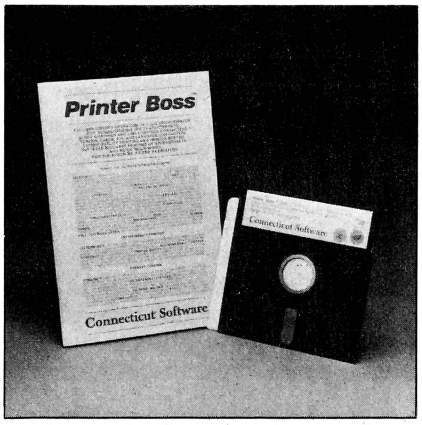


MAIN ELECTRONICS printed circuit board. Less crowding than on QX-10, despite added greater memory and 8088 processor. Same cooling fan (top right corner) is used in both computers.

The Valdocs file-handling and editing functions are enormously improved with the additional memory available. Further, Rising Star plans to use part of this memory for internal RAM disk, enhancing speed even more.

Valdocs 2, of course, will continue to be supported on the QX-10, but will perform better on the QX-16 as later releases begin to recognize the new hardware functionality.

Printer Boss™



Letter quality printing, sideways printing, RAM printer buffer, 5 alternate IBM character sets, graphics, Greek and screen symbols, custom font design, high-speed character-mode output and full control of your Epson printer on one plain-English menu.

Now you can have all of these features and more for your Epson MX, FX, RX, JX and LQ-1500 printers. And all at the touch of a few keys. Printer Boss™ software is simply the ultimate in printer control!

Print letter quality on your FX printer at full text-mode speed using our unique two-pass dot-matrix approach. Use this **high-speed technique** to overprint dots which fit precisely between the dots in the standard characters, filling in the annoying spaces and greatly enhancing readability while avoiding the smearing effect of doublestrike or other print modes. Or print graphics-mode letter quality on the MX, RX and JX printers.

Print multi-page spreadsheets or reports as wide as you like, **sideways on your paper,** in a choice of five different type sizes, with automatic pagination both vertically and horizontally, at high speed and on any Epson printer.

Create a **RAM printer buffer** of from 1 to 32K, so you can print in background while using your PC for other work. Buffer your normal, letter quality or sideways printing for higher efficiency and throughput.

Download any of **5 different IBM character sets,** including the Matrix, Graphics 1 and Graphics 2 printer sets, the Screen set and the APL set. Use IBM block and line graphics characters, IBM screen characters, Greek and APL symbols on any Epson printer. Printer Boss™ is ideal for IBM graphics software and for **screen dumps.**

Or **custom-design your own character font** using our new font design feature, and build a library of your own fonts for future use.

Printer Boss™ also allows **full menu-based operation** of all control functions of all of the Epson printers. Select and deselect pica, elite, compressed, italic, enlarged, emphasized, doublestrike, underline, superscript and subscript for scores of different type faces. Switch the LQ-1500 between draft and letter quality.

Set line spacing, right and left margins and skip-over-perforation. Load USA, France, Germany, England, Denmark, Sweden, Italy, Spain and Japan language sets. **Control** unidirectional, half-speed and proportionally-spaced printing. **Store** and retrieve 10 complete menu settings with a few keystrokes. **Emulate** the IBM-label printer for the IBM-PC.

Print **samples** from the menu, or use program modules provided for printing ASCII tables and spreadsheet and text samples. **Create ASCII files of data,** corresponding to the stored menu settings, which can be accessed by or included in your own programs to set up the printer as you wish.

Printer Boss provides all of the above features on **one easy-to-use menu,** and it's compatible and extremely useful with such word processing and spreadsheet programs as **Wordstar, Lotus 1-2-3, Visicalc** and many, many others. The package is streamlined, professional and intended for serious work by seasoned PC users, but is **easily operable by the neophyte.** As a primary objective the development team designed the menu and its operation to minimize mental effort and fatigue in printer set-up and operation, which is particularly important for the newcomer to computers.

Printer Boss™ runs on the IBM-PC, IBM-PCjr, IBM-XT or any compatibles; PC-DOS 1.1, 2.0, 2.1 or equivalent; double-sided disk drive; 128K RAM; Epson MX, FX, RX, JX or LQ-1500 printers or compatibles.

Printer Boss™ $59.95. With Letter Quality or Sideline™ options $99.95. With both $139.95. **Demo disk** $10.00 credited to order. VISA, MC, or send check. Free info. Dealers welcome, sales kit available.

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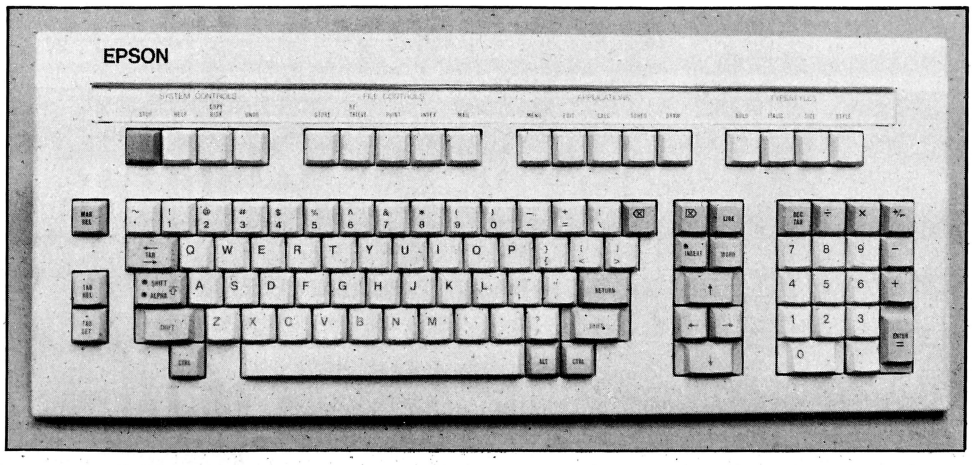


KEYBOARDS. Although nearly identical in layout. QX-16 (top) omits LEDs in function keys in dimple in five key on numeric cluster pad. Production QX-16 will have standard Valdocs functions printed on keycaps, as has always been done on QX-10 keyboards. QX-10 HASCI-2 board on bottom.

As an MS-DOS machine, the QX-16 offers excellent graphics capability, a half-megabyte of memory and one of the finest displays available. The keyboard, which we all (or at least I) appreciate, remains the same and will lend more comfortable use to whatever program is being used with MS-DOS.

Disk I/O performance seems better than most MS-DOS machines I've used, but this is a subjective evaluation based on a pre-release system.

It is clear that MS-DOS computers, running in a true 16-bit environment with an 80186 or 80286 processor, will be faster than the QX-16 with its 8088. But these systems will not support CP/M, TPM or Valdocs.

The QX-16 will run MS-DOS quite well, and users will undoubtedly enjoy the same quality of service and usability that the QX-10 has traditonally offered.

Computer evolution always adds performance to the next generation of hardware and usually reduces the price. The original tag on the QX-10 was just shy of three thousand dollars. The QX-16 is being introduced at just a whisker under twenty-five hundred dollars.

What did Epson cut out?

That is actually a mystery to me. The only obvious cut is in the number of accessory slots on the system. The QX-16 has three: the QX-10 has five. It is hard to believe that this reduction took five hundred bucks out of the design, especially when the memory and disk capacity was doubled, an 8088 processor was added and a second video display was thrown in to boot. It is unlikely that anyone is going to miss the extra two slots. The most I've seen used in QX-10s is two: one for a hard disk, the other for a Comrex CR-103 modem.

As an MS-DOS machine, (it) offers excellent graphics capability, a half-megabyte of memory and one of the finest displays available.

A detailed examination of the design and construction of the QX-16 shows no discernable difference in the quality of design, workmanship or materials between it and the QX-10.

My only conclusion is that the plastic used to make the QX-10 case cream-white must be terribly expensive compared to the whitish-grey used in the QX-16.

POWER OVER PRETTY, ANYDAY

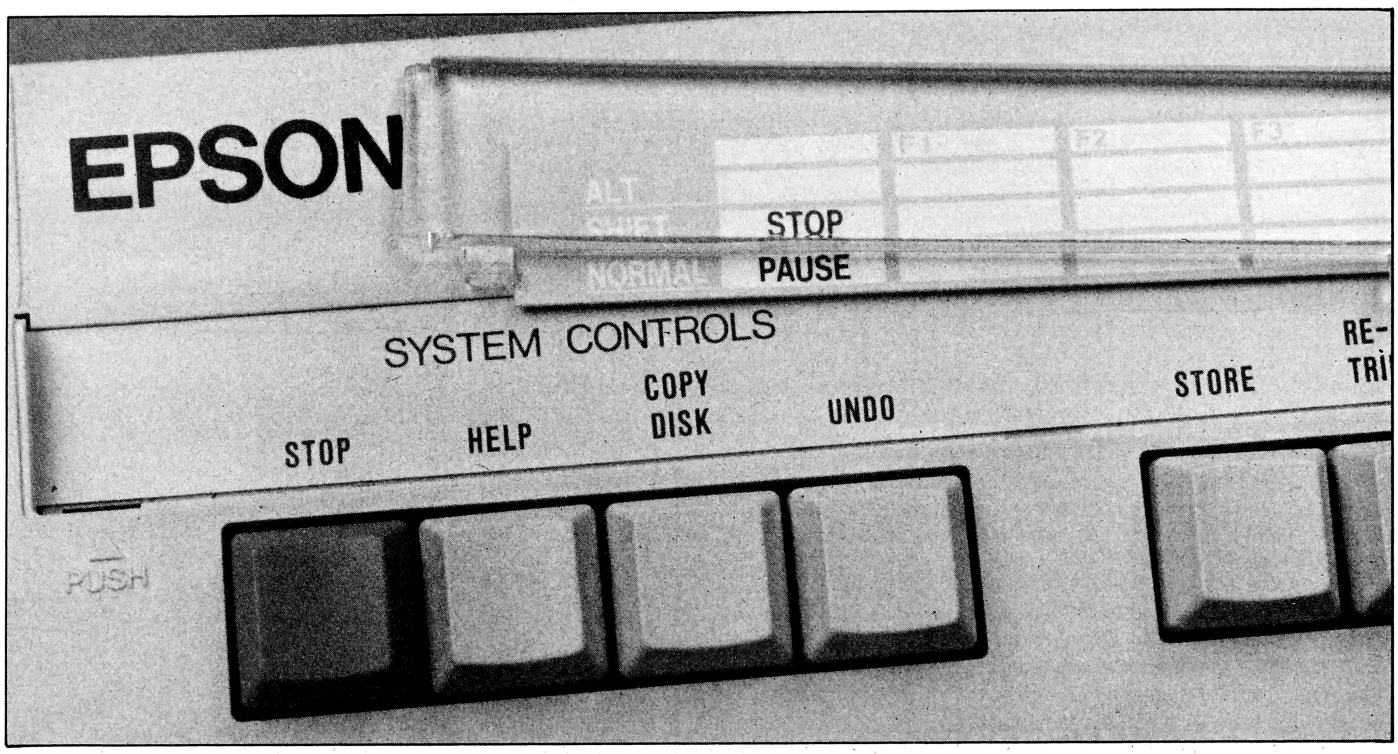
The QX-16 is a viable replacement for the QX-10. It offers increased memory, performance and disk capacity at a price not too much different from that of the QX-10. Users who need programs written for MS-DOS can use them, although the omnipresent spectre of "compatibility" hangs over their heads. To this I can offer no solace, counsel nor advice — yet.

The system I tested, I repeat, was a pre-release. It ran MS-DOS programs. Until the QX-16 is released, comments on timed performance and compatibility issues must be withheld.

Although I was not thrilled with the color motif of the QX-16, that won't matter one iota in the way the machine runs.

The QX-16 has more horsepower under the hood — lots more.

I'll drink to that anyday.



PLASTIC COVER STRIP. Label strip for application programs can be written on either pencil or ink and quickly exchanged for other applications under easily removed plastic cover.

SPECIFICATIONS FOR THE QX-16

Central Processing Units (CPUs):
MS-DOS MODE — 8088 running at 6 mHz
CP/M, TPM, Valdocs — Z-80 running at 4 mHz

Operating systems:
TPM II, TPM III
CP/M-80
MS-DOS 2.11

Disk drives:
Two 5.25-inch drives, double density, double-sided, 40/80-track operation
40-track (8088) capacity, 360K
40-track (Z-80) capacity, 720K
80-track (Z-80) capacity, 720K

Memory:
Two banks, 256K each; 512K standard in US

Standard features:
Three expansion slots
Selectric-like keyboard layout with separate numeric and editing cluster
Twelve-inch green phosphor monitor with 640- x 400-pixel graphics resolution; 25 lines of 80 characters in alpha-numeric mode
CMOS calendar-clock with battery backup
Centronics compatible parallel printer port
RS-232C serial interface
IBM-PC video display emulation controller

QX-16 BUNDLE PLUS OPTIONS

Hardware options:
Comrex 103 300 baud modem
Comrex 1510 10 megabyte hard disk
MS-DOS RGB Color System (not supported by Valdocs)
Documentation:
QX-16 operations manual
MS-DOS user's guide
CP/M 2.26 user's manual
Valdocs 2 introductory manual
Valdocs 2 tutorial
GW BASIC manual

Software supplied with the QX-16:
MS-DOS 2.11
CP/M 2.26
GW BASIC
Valdocs 2

At press time, Valdocs 2 was being tested and used outside of Rising Star (specifically, inside Epson). We're holding our breath for the Valdocs 2 release. And like many users, we are turning blue. Hopefully, expectations for Valdocs 2 have not ballooned beyond reality. We have seen and used it. If you like what Valdocs 1.18/1.19 does, you'll love it.

As far as we've been able to determine, Valdocs won't be shipped in February. Maybe not March, either. Inside reports indicate that Epson has determined that it'll hold the first release of Valdocs 2 for six weeks without allowing any changes, even bug fixes, prior to release.

Those of us around at the beginning recall the release of 1.14. It appears Epson did the same sort of thing then. They had 1.16 in hand several weeks before the release of 1.14, but "hadn't tested it enough" for release. If they had, it would have saved everyone a lot of trouble and embarrassment.

We are holding our breath. — *Ed.*

continued from page 52

menu prompts for radius in pixels, starting and ending angle in degrees. Drawing is performed in a clockwise direction.

CLS clears the screen (permanently).

DRAW lines manually with this command. Cursor and line thickness is adjusted with the plus and minus keys on the numeric keypad. Cursor movement is controlled by the numeric keypad as diagrammed in figure one.

FILL enclosed areas around the current cursor location with a specified pattern. Care must be used to insure that the area is fully bounded or the fill pattern will leak out and completely paint the screen.

MOVE objects from the screen to one of three temporary memories or from these memories to a screen location. An object being moved into memory can optionally be erased from the screen.

Objects are picked up for memory storage by first moving the cursor to the lower left corner of the object, then defining the object size and the memory which is to receive the object Objects are moved from memory to the screen by locating the cursor to the spot on the screen where the lower left corner of the object is to be placed and choosing which memory is to supply the object. Use care when selecting the memory to receive the objects. Any object already in a particular memory is replaced and lost when a new object is loaded.

Objects from a specified memory are placed on the screen at the current cursor location. The cursor defines the lower left corner of the object.

HOME moves the cursor to the upper left corner of the screen.

LOCATE moves the cursor to the postion specified by the supplied coordinates.

ERASE is similar to DRAW except the pixels under the cursor are extinguished rather than lit. The multiply and divide keys on the numeric keypad can be used to change the cursor movement steps.

RECTANGLE draws a rectangle of a specified size with the cursor at the top left corner. The rectangle can automatically be filled with a pattern when it is drawn.

SAVE the current screen image to the file SAVEDRW.DRW on the right disk drive. Any image currently in that file will be replaced.

EDIT loads the screen with the file in SAVEDRW.DRW. The current screen

```
3370 IF NU=1 THEN 3420
3380 LET NU=1
3390 LET PX=X: LET PY=Y
3400 PSET (X,Y)
3410 GOTO 1860
3420 LET NU=0
3430 CONNECT (PX,PY) - (X,Y)
3440 GOTO 1860
3450 DISPLAY 2
3460 CLS
3470 PRINT CHR$(27);CHR$(41);: PRINT@ 2,35;"HELP SCREEN"
3480 PRINT CHR$(27);CHR$(40);: PRINT@ 3,35;"-----------"
3490 PRINT
3500 PRINT
3510 PRINT "       The following commands are used while in the drawing screen
     mode."
3520 PRINT
3530 PRINT ".       Turns on the dotted line mode."
3540 PRINT "LINE    Turns off dotted line mode."
3550 PRINT "PRINT   Reserved."
3560 PRINT "+       Increases size of cursor each time pressed."
3570 PRINT "-       Decreases size of cursor each time pressed."
3580 PRINT "*       Increases speed of cursor movement in erase mode each time
     pressed."
3590 PRINT "<       Decreases speed of cursor movement in erase mode each time
     pressed."
3600 PRINT "/       Sets points each time pressed, after it is pressed a second
      time a             line is drawn between the two points."
3610 PRINT "D       Turns on draw mode."
3620 PRINT "R       Draws a rectangle at current cursor location."
3630 PRINT "F       Fills in area at current cursor location, with a pattern."
3640 PRINT "C       Draws a circle at current cursor location."
3650 PRINT "H       Moves cursor to upper left hand corner."
3660 PRINT CHR$(27);CHR$(41);
3670 PRINT
3680 PRINT "        PRESS NEXT PAGE TO VIEW NEXT PAGE"
3690 AAA=BYTE(0)
3700 CLS
3710 PRINT CHR$(27);CHR$(40);
3720 PRINT "E       Turns on erase mode."
3730 PRINT "V       Types characters of varying size and angle on screen."
3740 PRINT "T       Types characters of varying fonts on the screen."
3750 PRINT "HELP    Displays help screen."
3760 PRINT "MENU    Displays menu screen."
3770 PRINT "STORE   Stores drawing on disk."
3780 PRINT "RE-"
3790 PRINT "TRIEVE  Retrieves drawing from disk."
3800 PRINT "CTRL    When held down with any key it repeats that key."
3810 PRINT
3820 PRINT
3830 PRINT "   The following are character fonts to be used with the Type comma
     nd."
3840 PRINT
3850 PRINT " 0 - Normal text"
3860 PRINT " 1 - Bold text"
3870 PRINT " 2 - Italic text"
3880 PRINT " 3 - Bold italic text"
3890 PRINT " 4 - Normal subscript text"
3900 PRINT " 5 - Normal superscipt text"
3910 PRINT " 6 - Normal graphics"
3920 PRINT " 7 - Alternate graphics"
3930 PRINT " 8 - Normal compressed text"
3940 PRINT
3950 PRINT CHR$(27);CHR$(41);
3960 PRINT "       PRESS NEXT PAGE TO VIEW NEXT PAGE"
3970 AAA=BYTE(0)
3980 CLS
3990 PRINT CHR$(27);CHR$(40)
4000 PRINT " 9 - Bold compressed text"
4010 PRINT "10 - Italic compressed text"
4020 PRINT "11 - Bold italic compressed text"
4030 PRINT "12 - Subscript compressed text"
4040 PRINT "13 - Superscript compresses text"
4050 PRINT "14 - Compressed graphics"
4060 PRINT "15 - Alternate compressed graphics"
4070 PRINT
4080 PRINT CHR$(27);CHR$(41);
4090 PRINT "       PRESS DRAW TO RETURN TO DRAWING SCREEN"
4100 AAA=BYTE(0)
4110 IF DM=1 THEN 880 ELSE 1860
4120 SPLIT 0,7
4130 CLS
4140 PRINT "       fhhh
```

image is replaced with the one from the file.
QUIT transfers control to RSI BASIC. Any screen image present in Sdraw will be lost.
TYPE enters text on the screen at the current cursor location. Any of the 16 fonts available in RSI BASIC can be mixed with double width characters.
VAR-TYPE enters text on the screen using RSI BASIC's VPRINT. Characters may be of any size or thickness and printed at 0, 90, 180 and 270-degree angles.
PRINT is reserved for future use. Screen displays may be printed on Epson printers by the control-print keys. The border and status line can be removed from the screen with the border command.
BORDER and status line can be removed or added to the screen with this command.
CONNECT draws a line between two points.
LINES specifies the line thickness and type drawn with the draw command. Lines can be either dotted or solid.
HELP is provided via several screen using the Valdocs help key.

TABLE FOUR, QUICK KEY COMMANDS

. turns on the dotted line mode in the draw mode.
LINE turns off the dotted line mode.
PRINT is reserved, use control-print.
+ increases the size of cursor each time pressed.
− decreases size of cursor
× increases speed of cursor movement in erase mode each time pressed.
÷ decreases speed of cursor.
/ or ? sets points each time pressed. After it is pressed a second time a line is drawn between the first and second points. This function works only in erase. mode.
D turns on the draw mode.
R draws a rectangle.
F fills in area at current cursor location with a pattern.
C draws a circle at the current cursor location.
H moves the cursor to the upper left corner of the screen.
E turns on the erase mode.
HELP displays the help screen.
MENU displays the main menu.
STORE stores a drawing on disk.
RETRIEVE a drawing from disk.
STOP the printer from printing out picture.
CTRL, when held down with any other key, repeats that key.

●

```
4300 PRINT "i  DESCRIPTION: Draws a rectangle at current cursor location.
              i"
4310 PRINT "i  INPUT: x-dim, y-dim, pattern [0-7  0= backround color  1-7 gradi
     ent]      i"
4320 PRINT "i
              i"
4330 PRINT "ghhhh
```

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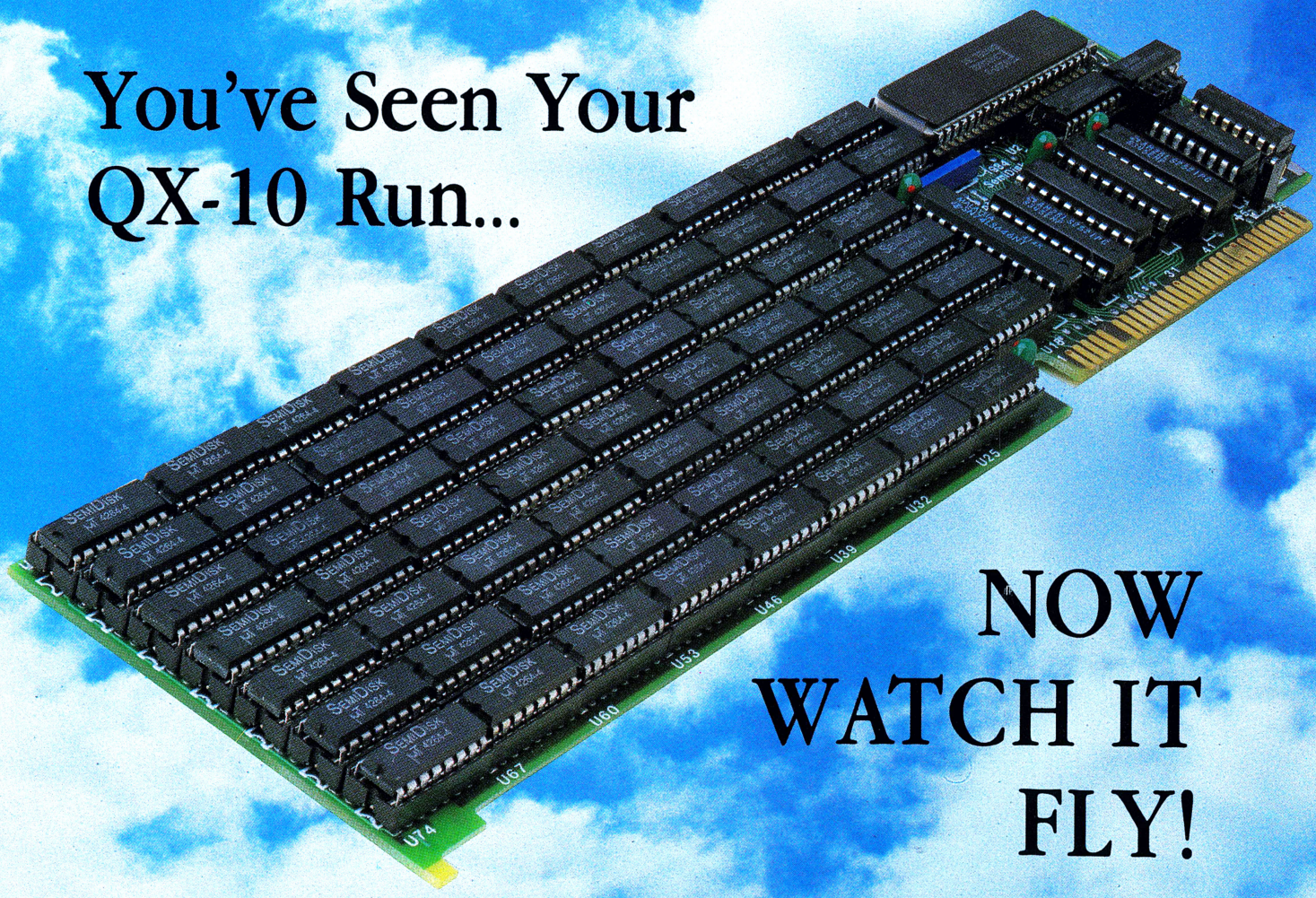

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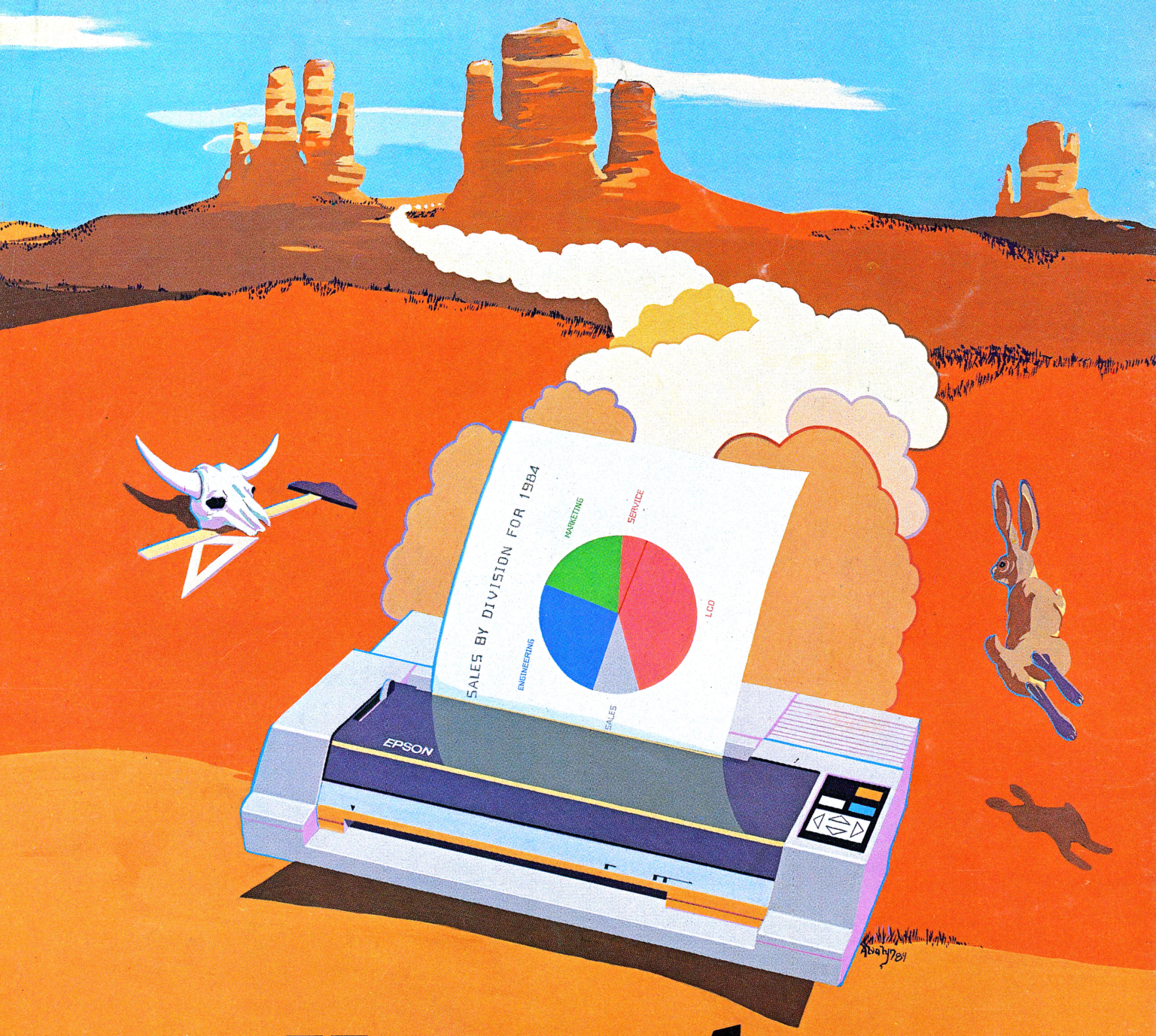

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